IBM

WebSphere Studio Application Monitor Installation and Customization Guide

3.2

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3.2

Note:

Before using this information and the product it supports, read the information in Appendix I, "Notices," on page 221.

Contents

Preface

About this book

This book is the Installation and Customization Guide for WebSphere Studio
Application Monitor (Application Monitor). It contains instructions on installing
user's exits and customizing the Application Monitor.

Who should read this book

Administrators or advanced users wanting to install or modify the configuration of
the Data Collector. For the z/OS system, anyone wanting to install or modify the
OS/390® or z/OS® Data Collector or the Managing Server. For the Data Collectors,
knowledge of the operating system (AIX, Solaris, Windows, Linux, or HPUX) and
WebSphere is expected. For the z/OS Data Collector, knowledge of WebSphere®,
MVS™ Systems programming and RACF® is expected. For the Managing Server, a
working knowledge on deploying WebSphere applications in a UNIX®
environment with DB2® and/or Oracle experience is expected.

Where to find more information

The following list shows the books in the Application Monitor library:

- *WebSphere Studio Application Monitor User's Guide* contains instructions and user
  information for the Application Monitor.
- *WebSphere Studio Application Monitor Operator's Guide* contains information about
  the operation of Application Monitor and the common services address space.
- *WebSphere Studio Application Monitor Installation and Customization Guide* contains
  instructions on installing user's exits and customizing the Application Monitor.
  In addition, contains troubleshooting and configuration information.
- *WebSphere Studio Application MonitorCICS® Data Collector Product Guide* contains
  information about the installation, configuration and use of the Application
  Monitor CICS Data Collector.
- *WebSphere Studio Application Monitor Messages and Codes* contains information
  about messages and codes generated by the Application Monitor.
- *WebSphere Studio Application Monitor Program Directory* contains complete
  installation instructions for the Application Monitor Engine.
- *The WebSphere Studio Application Monitor Controller* has an online help system that
  describes all of the commands and dialogs available from its graphical user
  interface.

Publications

This section describes how to access Tivoli publications online and how to order
Tivoli publications.

Accessing publications online

The documentation CD contains the publications that are in the product library.
The format of the publications is PDF, HTML, or both. Refer to the readme file on
the CD for instructions on how to access the documentation.

The product CD contains the publications that are in the product library. The format of the publications is PDF, HTML, or both. To access the publications using a Web browser, open the infocenter.html file. The file is in the appropriate publications directory on the product CD.

IBM posts publications for this and all other Tivoli products, as they become available and whenever they are updated, to the Tivoli software information center Web site. Access the Tivoli software information center by first going to the Tivoli software library at the following Web address:

http://www.ibm.com/software/tivoli/library/

Scroll down and click the **Product manuals** link. In the Tivoli Technical Product Documents Alphabetical Listing window, click the **WebSphere Studio Application Monitor** link to access the product library at the Tivoli software information center.

Note: If you print PDF documents on other than letter-sized paper, set the option in the **File → Print** window that allows Adobe Reader to print letter-sized pages on your local paper.

Ordering publications

You can order many Tivoli publications online at the following Web site:

http://www.elink.ibmlink.ibm.com/public/applications/ publications/cgibin/pbi.cgi

You can also order by telephone by calling one of these numbers:
- In the United States: 800-879-2755
- In Canada: 800-426-4968

In other countries, see the following Web site for a list of telephone numbers:

In other countries, contact your software account representative to order Tivoli publications.

Accessibility

Accessibility features help users with a physical disability, such as restricted mobility or limited vision, to use software products successfully. With this product, you can use assistive technologies to hear and navigate the interface. You can also use the keyboard instead of the mouse to operate all features of the graphical user interface.

For additional information, see the Accessibility Appendix at the end of this book.

Tivoli technical training

For Tivoli technical training information, refer to the following IBM Tivoli Education Web site:

http://www.ibm.com/software/tivoli/education

Support information

If you have a problem with your IBM software, you want to resolve it quickly. IBM provides the following ways for you to obtain the support you need:

- Searching knowledge bases: You can search across a large collection of known problems and workarounds, Technotes, and other information.
- Obtaining fixes: You can locate the latest fixes that are already available for your product.
- Contacting IBM Software Support: If you still cannot solve your problem, and you need to work with someone from IBM, you can use a variety of ways to contact IBM Software Support.

For more information about these three ways of resolving problems, see "Contacting IBM Software Support" on page 215.

Conventions used in this guide

This guide uses several conventions for special terms and actions, operating system-dependent commands and paths, and margin graphics.

Typeface conventions

This guide uses the following typeface conventions:

Bold

- Lowercase commands and mixed case commands that are otherwise difficult to distinguish from surrounding text
- Interface controls (check boxes, push buttons, radio buttons, spin buttons, fields, folders, icons, list boxes, items inside list boxes, multicolumn lists, containers, menu choices, menu names, tabs, property sheets), labels (such as **Tip:**, and **Operating system considerations**:)
- Keywords and parameters in text

Italic

- Words defined in text
- Emphasis of words (words as words)
- New terms in text (except in a definition list)
- Variables and values you must provide

`Monospace`

- Examples and code examples
- File names, programming keywords, and other elements that are difficult to distinguish from surrounding text
- Message text and prompts addressed to the user
- Text that the user must type
- Values for arguments or command options

Operating system-dependent variables and paths

This guide uses the UNIX convention for specifying environment variables and for directory notation.

When using the Windows command line, replace $*variable* with % *variable*% for environment variables and replace each forward slash (*/*) with a backslash (\) in

directory paths. The names of environment variables are not always the same in Windows and UNIX. For example, %TEMP% in Windows is equivalent to $tmp in UNIX.

Note: If you are using the bash shell on a Windows system, you can use the UNIX conventions.

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Part 1. Introduction

Chapter 1. Product Overview

The Application Monitor provides immediate problem determination, availability monitoring and performance management for enterprise J2EE, CICS and IMS applications running on Windows 2000 Server, Solaris, HP-UX, AIX, z/OS and OS 390 environments. The Application Monitor monitors heterogeneous environments consisting of both mainframes and distributed systems. From development and testing to staging and productions, the Application Monitor helps to identify problems and resolve them in real-time, as well as understand application performance, and assess resource consumption patterns for planning future growth.

In today's e-business applications, J2EE transactions often link up with Legacy back-end systems. The Application Monitor, along with the optional Data Collector for CICS, provides visibility into transactions that span across Application Server and CICS platforms. Composite transactions between J2EE servers and CICS can be traced and correlated, giving developers and analysts insight into the health and performance of both mid-tier business logic and Legacy back-end components.

Architecture

The Application Monitor is composed of two main parts: the Data Collector and the Managing Server. A Data Collector agent runs on each monitored J2EE Application Server or CICS transaction server, and communicates essential operational data to the Application Monitor Managing Server. Unique sampling algorithms maintain low CPU and network overhead while providing application specific performance information. The Application Monitor Managing Server is composed of a Kernel, which controls the environment, a Publish Server to publish and collect data, a Relational Database to store and retrieve that data, and a Visualization Engine which users interact within a browser-based graphical environment.
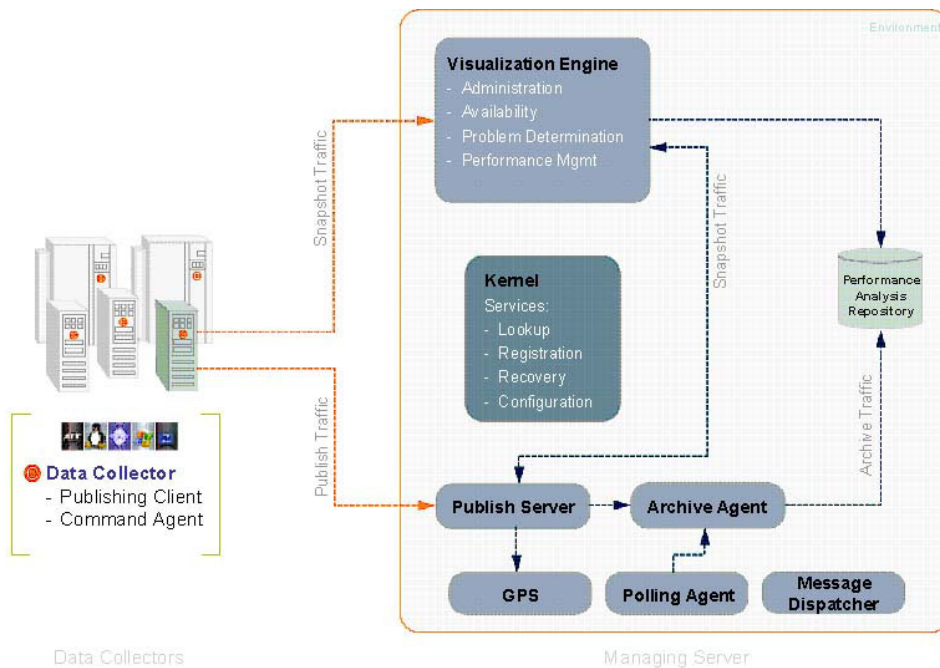
Figure 1. Application Monitor Architecture

The Managing Server

The Managing Server consists of several Java components, and also relies on an Application Server and a database, which must be installed prior to installing the Managing Server itself.

Requirements

You can choose among several supported operating system platforms on which to install the Managing Server. Likewise, you can choose among two Application Servers and versions, and two databases and versions. These requirements are described in detail in "Software Requirements" on page 9.

Supported Installations

The Managing Server is designed for scalability and load-balancing, and there are many ways to architect an installation across one or more servers. Likewise, the database used by the Managing Server can be located on a different server than the Managing Server itself. It is recommended that you consult with IBM Software Services for Tivoli when making these decisions, and that you do so before attempting to install the Managing Server.

The instructions in this document describe installing a Managing Server on a single server, with support for using a remote database. The procedure for doing so uses a graphical installer. This document does not describe how to install the Managing Server manually, or how to install the Managing Server with a more complicated architecture.

Complete installation and configuration instructions are included in Part 2, "The Managing Server Installation," on page 7.

Data Collectors

Once you have installed the Managing Server (or once you have determined its configuration properties,) you can install Data Collectors.

In order for the Application Monitor to monitor a managed host, you must first install a Data Collector on that server.

Many Data Collectors can work with a single Managing Server. The communication between Data Collectors and the Managing Server is independent of platform.

Requirements

Data Collectors are specific to operating system platform, Application Server type and version. For non-z/OS and non-OS/390 servers, the supported combinations are listed on "Requirements for Installing the Data Collector" on page 101. For z/OS go to "Platform prerequisites" on page 53.

Supported Installations

The installation procedures you need to follow conform to one of two formats, based on whether or not the operating system of the monitored server is z/OS or OS/390.

- Installation of Data Collectors on the z/OS and OS/390 platforms are covered in Part 3, "The Data Collector for z/OS," on page 51.
- Installation of Data Collectors on all other platforms are covered in Part 4, "The Data Collector for Multiplatforms," on page 99.

In addition, for non-z/OS and non-OS/390 Data Collectors, you can run a graphical installer, or install the Data Collector manually. These installation options are described in Chapter 13, "Installation and Configuration," on page 105.

Part 2. The Managing Server Installation

Chapter 2. Preparing to Install

This section describes how to install the Managing Server.

Planning Your Installation

The following information will help you plan your installation of the Managing Server.

Software Requirements

The Managing Server is a standalone server (or in some cases, a collection of servers.) It consists of the following elements:

- Database – to store performance data and configuration information.
- J2EE Application Server – to run the monitoring console.
- Java Components – The Managing Server consists of several components, each of which runs as a Java process, including the following: Kernel, Publish Server, Archive Agent, Message Dispatcher, Polling Agent, Global Publish Server and the Port Consolidator.

You must have a supported combination of operating system platform, database and Application Server in order to use the Managing Server. Table 1 on page 9 describes the supported combinations.

Table 1. Managing Server Requirements

Operating System	Database	Application Server	JDK
AIX 5.1	DB2 8.1ESE w/FP3+, DB2 8.2	WebSphere 5.1.1	Supplied by Application Server
AIX 5.2	DB2 8.1ESE w/FP3+, DB2 8.2	WebSphere 5.1.1	Supplied by Application Server
AIX 5.3	DB2 8.1ESE w/FP3+, DB2 8.2	WebSphere 5.1.1	Supplied by Application Server
x/Linux: RHEL 2.1AS	DB2 8.1ESE w/FP3+, DB2 8.2, Oracle 8i S/E R3 8.1.7+, Oracle 9i S/E R2 9.2+, Oracle 10g	WebSphere 5.1.1	Supplied by Application Server
x/Linux: RHEL 3.0AS	DB2 8.1ESE w/FP3+, DB2 8.2, Oracle 8i S/E R3 8.1.7+, Oracle 9i S/E R2 9.2+, Oracle 10g	WebSphere 5.1.1	Supplied by Application Server
Solaris 8	DB2 8.1ESE w/FP3+, DB2 8.2, Oracle 8i S/E R3 8.1.7+, Oracle 9i S/E R2 9.2+, Oracle 10g	WebSphere 5.1.1	Supplied by Application Server
Solaris 9	DB2 8.1ESE w/FP3+, DB2 8.2, Oracle 8i S/E R3 8.1.7+, Oracle 9i S/E R2 9.2+, Oracle 10g	WebSphere 5.1.1	Supplied by Application Server
Solaris 8	Oracle 8i S/E R3 8.1.7+, Oracle 9i S/E R2 9.2+, Oracle 10g	WebLogic 8.1 sp3	Supplied by Application Server

Table 1. Managing Server Requirements (continued)

Operating System	Database	Application Server	JDK
Solaris 9	Oracle 8i S/E R3 8.1.7+, Oracle 9i S/E R2 9.2+, Oracle 10g	WebLogic 8.1 sp3	Supplied by Application Server
z/Linux : SuSe Linux 8.1	DB2 8.1ESE w/FP3+, DB2 8.2	WebSphere 5.1.1	Supplied by Application Server
Windows 2000 Server with sp4, Windows 2000 Advanced Server with sp4	DB2 8.1ESE w/FP3+, DB2 8.2, Oracle 8i S/E R3 8.1.7+, Oracle 9i S/E R2 9.2+, Oracle 10g	WebSphere 5.1.1	Supplied by Application Server
Windows 2003 Server, Windows 2003 Enterprise Server	DB2 8.1ESE w/FP3+, DB2 8.2, Oracle 8i S/E R3 8.1.7+, Oracle 9i S/E R2 9.2+, Oracle 10g	WebSphere 5.1.1	Supplied by Application Server
Note: All OS levels will also satisfy the patch levels required by the WebSphere or WebLogic in use. **Note:** Managing server runs as a 32-bit app on 64-bit versions of platforms except for Windows, zLinux. 64-bit versions of Windows 2003 and 64-bit versions of Intel Linux will not be supported. **Note:** Managing Server does not support SSL connection with both WebSphere and WebLogic.			

Install Services for UNIX (Windows-only)

To support Managing Server scripts on Windows platforms, a UNIX shell environment is necessary. Microsoft Windows Services for UNIX (SFU) 3.5 should be installed. For further information about SFU, please visit http://www.microsoft.com/windows/sfu/default.asp.

Hardware Requirements

The memory requirements for the server running the Managing Server are a function of your workload. However, 4GB of memory is recommended for most installations. The disk space requirements are a function of the amount of performance data you choose to store in the database.

Table 2. Recommended Hardware Configuration

	CPU	DISK	MEMORY
AIX 5L	4 Way	2 x 36 GB	4 GB
Intel/Linux: RHEL 2.1AS, 3.0AS	4 Way	2 x 36 GB	4 GB
Solaris 8	4 Way	2 x 36 GB	4 GB
Windows 2000 Server with sp4, Windows 2000 Advanced Server with sp4, Windows 2003 Server, Windows 2003 Enterprise Server	2 Way	2 x 36 GB	4 GB

Note: Embedded installer does not allow you to install WebSphere Application Server 5.1.1 and IBM DB2 8.1 if it already exists on the system.

Table 3. Requirements for Custom Installations

	DISK SPACE
Custom installation: Disk space required for an installation of IBM WebSphere Application Server 5.1.1	540 MB
Custom installation: Disk space required for an installation of IBM DB2 8.1 fixpack 3.	600 MB
Note: 1. The minimum memory is 1 GB. 2. On AIX and Solaris, the temporary space required if installing IBM DB2 is 1460 MB and 1440 MB, respectively. 3. To install IBM DB2 v8.x on Solaris, you need to add the following kernel settings in /etc/system file and reboot your system. **For systems with 2GB - 4GB of physical memory:** set msgsys:msginfo_msgmax = 65535 set msgsys:msginfo_msgmnb = 65535 set msgsys:msginfo_msgssz = 32 set msgsys:msginfo_msgseg = 32767 set msgsys:msginfo_msgmap = 2562 set msgsys:msginfo_msgmni = 2560 set msgsys:msginfo_msgtql = 2560 set semsys:seminfo_semmap = 3074 set semsys:seminfo_semmni = 3072 set semsys:seminfo_semmns = 6452 set semsys:seminfo_semmnu = 3072 set semsys:seminfo_semume = 240 set shmsys:shminfo_shmmax = 1932735283 set shmsys:shminfo_shmmni = 3072 set shmsys:shminfo_shmseg = 240 **For systems with 4GB - 16GB of physical memory:** set msgsys:msginfo_msgmax = 65535 set msgsys:msginfo_msgmnb = 65535 set msgsys:msginfo_msgssz = 32 set msgsys:msginfo_msgseg = 32767 set msgsys:msginfo_msgmap = 3586 set msgsys:msginfo_msgmni = 3584 set msgsys:msginfo_msgtql = 3584 set semsys:seminfo_semmap = 4098 set semsys:seminfo_semmni = 4096 set semsys:seminfo_semmns = 8602 set semsys:seminfo_semmnu = 4096 set semsys:seminfo_semume = 240 set shmsys:shminfo_shmmax = 3865470566 set shmsys:shminfo_shmmni = 4096 set shmsys:shminfo_shmseg = 240	

Database Considerations

For more information on database considerations, see Chapter 3, "Installation and Configuration," on page 15 specifically the "Database Installation" on page 16.

Networking Considerations

The server(s) on which the Managing Server is installed must have a hostname and IP address (rather than just using localhost or 127.0.0.1.)

Data Collectors use eight ports to communicate with the Managing Server: six ports for TCP/IP sockets, and two ports for RMI. In addition, the two unique ports are needed for each Data Collector, in order for the Managing Server to contact the Data Collectors via RMI. See the Installation and Customization Guide, Appendix C. Port Consolidator.

If a firewall sits between your Managing Server and your Data Collectors, you must configure your firewall to allow these connections. See "Configuring Your Firewall" on page 37 for details.

Installation Overview

Here is a summary of the instructions in this chapter which describe how to install or upgrade the Managing Server.

Required authorization role

In UNIX environment, the user who installs the product must be the **root** user. In Windows environments, the user who installs the product must be the **Administrator** user.

Note:

1. The following requirements apply to the user that you define for WebSphere Application Server.
   - Windows: must have membership in the **Administrators** group.
   - UNIX: must have **root** privileges.

     (*Windows-only*) The user that runs the Managing Server needs the privileges "Act as part of the Operating System" and "Logon as Service." To verify these permissions, go to **Control Panel** > **Administrative Tools** > **Local Security Policies**.

2. The following requirements apply to the admin, fence (UNIX-only), and instance users that you define for DB2:
   - Window: create a new user.
   - UNIX: create a new user or use a preexisting user. You must define a group name and home directory for new accounts.

     The accounts you create have full administrative rights to the DB2 database.

Preparing to Install

You must perform several tasks before you can install the Managing Server.

Note: The installer will allow you to install IBM DB2 v8.1 fixpack 3 and IBM WebSphere Application Server 5.1 fixpack 1 during the installation if you choose, otherwise you may install and configure them manually.

If you choose not to install WAS/DB2, perform the following tasks based on your needs:
- Install and configure DB2 or Oracle.
- Install WebSphere or WebLogic.
- Install Virtual Frame Buffer, see "Install Virtual Frame Buffer" on page 13.

Installing and Configuring

- Create users and set up environment.
- Gather configuration.
- Run installer.
- Start server.

Performing Post-Installation Tasks

See Chapter 4, "Customization," on page 35 for more information about what to do once you have finished installing the Managing Server.

Upgrading Considerations

Follow the normal installation steps and then see "Upgrading Considerations" on page 31

Preparing your Environment for Installation

Install J2EE Application Server

In order to install the Managing Server, you must first install a supported combination of a database and an Application Server. The supported combinations are described in Table 1 on page 9.

To install WebSphere:
1. Install the Application Server according to manufacturer's instructions (See WebSphere Installation Guide).

To install WebLogic:
1. Install the Application Server according to manufacturer's instructions (See WebLogic Installation Guide).

Optional: Install Web Server

If you want to have the WSAM Web console run on port 80, you will need to install and configure an HTTP server to serve those requests. You can find the instructions at Appendix E.

Install Virtual Frame Buffer

To ensure the graphics environment for the Application Monitor is properly setup, an X11 environment is necessary. On the Managing Server, X is not required. Instead, a virtual X11 environment is used. Virtual frame buffer is required for displaying graphs.

For Red Hat Linux: Install the XFree86-Xvfb package. You can find this on your Red Hat Linux CD or via redhat.com.

For AIX: Install the Virtual Frame Buffer (xvfb). This package can be found on the AIX® installation CD X11.vfb package ("Virtual Frame Buffer Software for AIX Windows®") from the AIX CD.

For Solaris: Install from the x11 distribution.

For z/Linux: Install from the x11 distribution.

For Windows: Virtual Frame Buffer is not required to be installed on Windows platform.

Chapter 3. Installation and Configuration

The following provide instructions for how to install and configure the Managing Server. Please review Chapter 2, Preparing to Install for information on Software Requirements, Hardware Requirements, Database Considerations and Network Considerations.

Create Users and Set up User Environment

The Application Monitor uses UNIX or Windows user names and passwords for authentication. The Application Monitor associates its users with UNIX or Windows accounts on the server that hosts the Managing Server.

You must create two user accounts used exclusively by and for the Application Monitor:

- Create the user named "amuser", who owns the Managing Server file system.

  Note: If you are using a remote database, the same user must be created on the local machine.
- Create the user named "admin", who is the Application Monitor administrator.

Create Users (UNIX-only)

The following instructions show you how to create users and the directory structures.

To create users and directory structures :

1. Log in as root.
2. Create the username "amuser" and assign a password using the following commands:

   Note: If you are using a remote database, the same user must be created on the remote machine.

   Note: The command, useradd, is typically located at /usr/sbin.
   ```
   useradd amuser
       passwd amuser (example ampassword)
   mkdir /home/amuser
   ```
3. Create the username "admin" if it does not exist and assign a password using the following commands:
   ```
       useradd admin
       passwd admin
   mkdir /home/admin
   ```
4. Change ownership rights of the newly created home directories to the users they belong to. For example:
   ```
   chown amuser:amuser /home/amuser
   ```
5. [optional] Create the group "amuser" using the following commands:

   Note: You can create a group called "amuser" to organize your system; however, Application Monitor does not need this group to operate properly.

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For AIX:

```
mkgroup amuser
```

For Solaris and Linux:

```
groupadd amuser
```

6. Login to the server using the "amuser" and "admin" usernames and passwords.

   The security set up on many systems requires the user to physically login for the first time. On some UNIX systems, you receive a prompt the first time you login, this prompt will cause the Application Monitor scripts to fail.

Create Users (Windows-only)

The following instructions show you how to create users and the directory structures.

To create users and directory structures :

1. Log in as Administrator.
2. Create the username "amuser" and assign a password. Add this user into group Administrators.

   Note: If you are using a remote database, the same user must be created on the local machine.
3. Grant the privilege "Act as part of the operating system" to user "amuser" using the following operations: Start > Programs > Administrative Tools > Local Security Policy > Local Policies > User Rights Assignment > Act as part of the operating system > Add the user "amuser."

   Note: To make this privilege effective, user "amuser" needs to log out the system and re-log in, or, a system reboot is recommended.
4. Create the username "admin" if it does not exist and assign a password.
5. Login to the server using the "amuser" and "admin" usernames and passwords.

   The security set up on many systems requires the user to physically login for the first time.

Database Installation

The following instructions include all the information you need to set up your database for WSAM. You will probably need a DBA to perform these steps.

Install Database

In order to install the Managing Server, you must first install a supported combination of a database and an Application Server, if you chose not to use the embedded installer which installs IBM DB2 v8.1 fixpack 3. The supported combinations are described in Table 1 on page 9.

Note: This task may require a DBA skill set.

Note: The installer will create a UTF-8 database instance. If you are manually creating a database instance, you must create a UTF-8 database instance.

To install and configure DB2:

1. Install DB2 according to manufacturers instructions or use the embedded installer to install it.
2. Install the necessary fixpacks to bring DB2 up to fixpack 3.
3. Create a DB2 server instance according to the DB2 installation documentation, (unless you are using the default user and instance.)

To install and configure Oracle:

1. Install the supported Oracle according to manufacturers instructions.

Setting up the Database

The following are instructions for preparing your database for installation.

To prepare a DB2 database for installation:

If the Managing Server is AIX-based and it uses a local database, proceed as follows:

Note: If the platform is AIX or Linux/z/Linux then make sure that the DB2 instance can be accessed remotely. You need to specify the TCP/IP port while creating the DB2 instance.

Note: You do not need to perform steps 1-3 if a remote database is used or if a loopback node has been created for using TCP/IP communication instead of shared memory communication.

1. Edit the file <db2_instance_home>/sqllib/db2profile to include the following lines:

    ```
    EXTSHM=ON
    export EXTSHM
    ```

    The default location for the file is /home/db2inst1/sqllib/db2profile.

2. Log in as the instance owner (e.g. db2inst1):

    ```
    su - db2inst1
    ```

3. As the instance owner, issue the commands:

    ```
    db2stop force
    db2set DB2ENVLIST=EXTSHM
    db2start
    ```

To prepare an Oracle database for installation:

Create an Oracle database with a SID name **octigate**, using utility:

```
dbassist (Oracle 8i)
```

```
dbca (Oracle 9i & 10g)
```

Note: If you are using Oracle 8i, edit the init.ora available in the directory <oracle home>/dbs/init<oracle sid>.ora and modify the compatible parameters to 8.1.x.

Note: For the Solaris operating system, make sure that the UNIX sqlplus user (oracle's) environment variables are defined in a <users home dir>/.profile file (if using ksh or sh) and .bash_profile (if using bash). For example:

```
/export/home/oracle/.profile
```

For Oracle 10g instance, follow the tuning instructions described in the file: <AM_HOME>/etc/oracle10g-readme.txt.

For DB2 instance, follow the tuning instructions described in the file: <AM_HOME>/etc/DB2-readme.txt.

Using a Remote Database

The following instructions describe how to prepare the database used by the Managing Server, in cases where your database is installed on a different server than the Archive Agent (a component of the Managing Server.)

Within this section, refer to the servers as follows:

- The server on which the Visualization Engine and Archive Agent are installed is the local server.
- The server on which the database is installed is the remote server.

Note: In this scenario, you must install the database client (DB2) or JDBC libraries (Oracle) on the local machine.

Using Remote DB2

Create a consistent user on the local and remote database. The database server needs to have the same username and password as the Managing Server.

To install the DB2 client on the the local server:

1. Install the DB2 client on the local machine.

After you prepare DB2 on the remote machine, and install the DB2 client on the local machine, you can proceed with the installation of the Managing Server, as described in "Run Installer" on page 27.

To prepare remote DB2 for use with the Managing Server:

1. Install DB2 on the remote machine.

   Note: On the remote machine, a user account for example, "amuser" should be created (the same as on the Managing Server.)

   The following steps should be performed on a local machine.

2. Log in as a user with dba privileges, for example: db2inst1.

   Note: For convenience purposes, you may want to log in as root. In the following steps, you will be executing a script that prompts for the password multiple times. This can be avoided if you run it as root.

3. Catalog TCP/IP node pointing to remote node. For example:

   ```
   db2 catalog tcpip node <db2node> remote <Remote Server>
   server <db2 listening port>
   ```

4. Catalog database on the node just created. For example:

   ```
   db2 catalog db octigate at node <db2node>
   ```

5. Create a temporary directory on remote machine in which to place the database installation scripts. In this example use /tmp (UNIX) or c:\temp (Windows).

6. ftp the file db2-remote-scripts.tar to the temporary directory. (Located in the Installer-MS/scripts directory.)

   Note: The db2-remote-scripts.tar file is provided with the Managing Server distribution (in /Installer-MS/scripts/).

7. Untar the db2-remote-scripts.tar file.

8. UNIX only: Run the db2install.sh script, specifying the database user name and installation directory. For example:

```
cd /tmp/db2/bin
```

```
sh db2install.sh <db username (db2inst1)> <db_user (amuser)>
<absolute path installation dir>
```

Note: The db username must have dba privileges, e.g. db2inst1.

Note: When you get prompted for password, enter the password for the db2inst1 user.

Note: The absolute path installation dir is a db2 directory in the temporary directory containing the installation scripts, e.g. /tmp/db2.

Note: The db2install.sh script invokes the scripts db2configuration.sh and db2createschema.sh. The db2configuration.sh script invokes the script dbsettings.sql, and the db2createschema.sh script invokes the am-db2.sql script.

9. Windows only: Run the db2install.bat script, specifying the database user name and the password. For example: cd

```
c:\temp\db2\bin
```

```
db2install.bat <db username (db2inst1)> <db_password>
<tablespace> <schema user> <schema password>
```

Note: The db username must have dba privileges, e.g. db2inst1.

Note: When you get prompted for password, enter the password for the db2inst1 user.

Note: The absolute path installation dir is a db2 directory in the temporary directory containing the installation scripts, e.g. c:\temp\db2.

Using Remote Oracle

To use a remote Oracle database with the Managing Server, you must prepare the Oracle database on the remote machine, and install JDBC drivers on the local machine.

To prepare to use remote Oracle with the Managing Server:

1. Install Oracle on the remote machine.
2. Create the SID for use by the Managing Server. For example: octigate.
3. Create a temporary directory on the remote machine. In this example use /tmp (UNIX) or c:\temp (Windows).
4. ftp the file oracle-remote-scripts.tar to the temporary directory.

Note: The oracle-remote-scripts.tar file is provided with the Managing Server distribution (in /Installer-MS/scripts/).

5. Log in as a user with dba privileges. For example: oracle.
6. Untar the oracle-remote-scripts.tar file. (Located in the Installer-MS/scripts directory.)
7. Export the ORACLE_SID used by the Managing Server. For example:

```
export ORACLE_SID=octigate
```

8. UNIX only: Run the oracleinstall.sh script, which has the following format:

```
cd /tmp/oracle
```

```
sh bin/oracleinstall.sh <dba user> <dba password> <tablespace>
  <schema user> <schema password>
```

Note: The <dba user> must be the owner of the Oracle database hierarchy. For example: system.

Note: The <tablespace> is the name of the tablespace that will be created when you run the oracleinstall.sh script. This is the tablespace the Managing Server will use. This <tablespace> will be removed if it exists.

Note: The <schema user> (amuser) and <schema password> are the login and password of the user that the Managing Server uses to connect with the database, using JDBC. This same login and password must be used during the Managing Server installation. This schema user must exist in the local operating system.

9. Windows only: Run the oracleinstall.bat script, which has the following format:

```
cd c:\temp\oracle

bin\oracleinstall.bat <dba user> <dba password> <tablespace>
  <schema user> <schema password>
```

Note: The <dba user> must be the owner of the Oracle database hierarchy. For example: system.

Note: The <tablespace> is the name of the tablespace that will be created when you run the oracleinstall.bat script. This is the tablespace the Managing Server will use. This <tablespace> will be removed if it exists.

Note: The <schema user> (amuser) and <schema password> are the login and password of the user that the Managing Server uses to connect with the database, using JDBC. This same login and password must be used during the Managing Server installation. This schema user must exist in the local operating system.

To install JDBC libraries on the the local server:

Install the thin JDBC drivers on the local machine.

After you prepare Oracle on the remote machine, and install the JDBC drivers on the local machine, you can proceed with the installation of the Managing Server, as described in "Run Installer" on page 27.

Setting the Environment

In order to set up the proper environment for the Managing Server, it may be helpful to set up a profile for the "amuser" user that is appropriate for your Application Server and database. In addition, if your security policies allow, it may be helpful for these environment variables to be added to the "root" user as well.

The examples in this section assume that the "amuser" user uses the bash or bourne shell, which means you can add the appropriate lines to the .bash_profile or .profile in the home directory of the "amuser" user. If you are using another shell, you must use the appropriate syntax in the appropriate startup script for your environment.

Font Resolution Recommendations

For the English version of the Managing Server, the default resolution is recommended maximized to 1024x768 with default toolbars. For the Japanese version of the Managing Server, the resolution is recommended at 1280 by 1024 pixels.

WebLogic

Include in the profile of the "amuser" user (likely found under /home/amuser/.profile) the following:

- Point WL_HOME to the location of the local WebLogic Application Server installation directory, which is typically one of the following:

  For example:

  ```
  export WL_HOME=/opt/bea/weblogic/
  ```

- Point JAVA_HOME to the location of the JDK

  For example:

  ```
  export JAVA_HOME=/opt/bea/jdk141/
  ```

- Modify PATH to include

  ```
  export PATH=${JAVA_HOME}/bin:${PATH}
  ```

DB2

Based upon your decision to use either an existing remote/local or the new embedded installer version of the database, perform these instructions on that machine. Include in the profile of the "amuser" (likely found under /home/amuser/.profile, or it may be at a different location for your environment) user the following:

- Source the files db2profile, which is located in the sqllib subdirectory of the DB2 home directory respectively.

The following lines are an example of the code to insert into the profile, if it already exists you don't have to do this;

```
if [ -f /home/db2inst1/sqllib/db2profile ]; then
  .  /home/db2inst1/sqllib/db2profile
fi
```

Note: All references to db2inst1 should be replaced with the appropriate DB2 instance name.

Oracle

No updates required.

Example Configurations

The following is an example of a profile for WebSphere and DB2 on Linux:

EXAMPLE profile for user "amuser" for DB2 on Linux
```if [-f /home/db2inst1/sqllib/db2profile]; then   . /home/db2inst1/sqllib/db2profile fi```

Setting up the Graphical Environments (UNIX-only)

In order to display graphs, the Managing Server needs a connection to an X Window display. To accomplish this, start a virtual frame buffer X server, and set your environment appropriately.

To set up the graphical environment for the Managing Server installer:

1. Log in as root or whatever user you will be using to install the Application Server.
2. Start the Virtual X environment:

   Linux

   ```
   Xvfb :1 &
   ```

   (Typically located in /usr/X11R6/bin.)

   AIX

   ```
   X -vfb -force :1 &
   ```

   (Typically located in /usr/bin/X11/X.)

   Solaris 8 and 10

   ```
   Xvfb :1 &
   ```

   (Typically located in /usr/X/bin.)

   Solaris 9

   ```
   Xvfb :0 &
   ```

   (Typically located in /usr/openwin/bin.)

   z/Linux

   ```
   Xvfb :1 &
   ```

   (Typically located in /usr/bin/X11.)

   You may verify this by using the following command:

   ```
   ps -ef | grep Xvfb
   ```

   This command may vary according to the shell you are using.

Setting up the Services for UNIX

In order to support Managing Server scripts on Windows platforms, a UNIX shell environment is necessary. To accomplish this, install the SFU 3.5, and set your environment appropriately. To set up the SFU for the Managing Server installer:

1. Log on as Administrator.
2. Extend the System Environment Variable Path with:

   ```
   %SFUDIR%bin;%SFUDIR%usr\sbin
   ```

Gather Configuration Information

The graphical installer will prompt you to enter configuration information about your Application Server, database, logins and filesystem. Gather this information before you run the graphical installer, since you will need it to complete the installation.

In all cases, you need the information about the Managing Server. However, the specific information you need to gather about the Application Server and database depends on which ones you use.

Note: If you are using a remote database, make sure the settings you use for the database match those of the remote database.

Managing Server

Determine the values you will use for the following names, directories, files and ports (defaults listed in parentheses):

- "amuser" user UNIX password (ampassword)
- Managing Server installation directory (/MS_AM_HOME)
- Primary Kernel server name (<Hostname for Managing Server>)
- Primary Kernel Codebase server port (9122)
- Primary Kernel RFS server port (9130)
- Primary Kernel RMI server port (9118)
- Secondary Kernel server name (<Hostname for Managing Server>)
- Secondary Kernel Codebase server port (9123)
- Secondary Kernel RFS server port (9121)
- Secondary Kernel RMI server port (9119)
- Archive Agent 1 Port (9129)
- Archive Agent 2 Port (9130)
- Publishing Server 1 Port (9103)
- Publishing Server 2 Port (9104)
- Message Dispatcher Port (9106)
- Polling Agent Port (9111)
- Global Publish Server 1 Port (9126)
- Global Publish Server 2 Port (9127)

Install WebSphere

Gather the following information in order to install IBM WebSphere Application Server 5.1 fixpack 1.

User - Type a user name for a valid user account on the host computer. This user must have membership in the **Administrators** group. There are no case or character restrictions for this user name.

(Windows-only) The user that runs the management server needs the privileges "Act as part of the Operating System" and "Logon as Service." To verify these permissions, go to **Control Panel** > **Administrative Tools** > **Local Security Policies**.

Password - Type the user password that corresponds to the user name in **User**.

Admin Console Port - Accept the default port setting of 9090, unless the port is in use. If the default port is in use, try an alternate port number such as 9091 or 9092. You can specify any valid TCP/IP port numbers from 1 to 65535.

Note: AIX 5.1 and 5.2 use port 9090 for WebSM by default. Change this port number if you are running on an AIX 5.1 or 5.2 system with WebSM. Alternatively,

an AIX administrator can disable WebSM using the following command in the **/usr/websm/bin** directory of the WebSM installation:

```
wmserver -disable
```

WAS Base Directory - Gather a location where you want to install WAS.

Image Location - Gather the installation image location information for IBM WAS 5.1 and IBM WAS 5.1 fixpack 1. For example:
- For WAS 5.1, select a directory which has the license.txt file.
- For WAS 5.1 fixpack, select a directory which has the version.properties file.

Note: Copy images from the CD-ROM to your local drive. The installation program does not support the CD-ROM installation. These image locations should have write permissions

Use existing WebSphere

If you are using WebSphere as your Application Server, gather the following information before you run the graphical installer:
- WebSphere instance host name and SOAP port (8880)
  - If using ND, provide the hostname and SOAP port of the Deployment Manager instead.
  - This connector port is used by the WebSphere Application Server to send commands using the Simple Object Access Protocol (SOAP). You obtain this information in the following file:

    ```
    WAS_base_dir/config/cells/cell/nodes/node/serverindex.xml
    ```
- WebSphere Application Server name (wsam_server)
  - Name of the server you want to use as the Managing Server. If a server with this name already exists then it will be deleted and recreated.

If Global Security is turned on, provide the WebSphere Username and Password of a WebSphere user with administrative rights.:
- WebSphere Username
- WebSphere Password

WebLogic

If you are using WebLogic as your Application Server, gather the following information before you run the graphical installer:
- WebLogic Host Name - The name of the host where the WebLogic Admin Server is running.
- WebLogic Admin Server Port (7001) - The listen port of the admin server, you obtain this information in the following file: <weblogic base directory>/user_projects/domains/<domain name>/config.xml
- WebLogic Admin user (weblogic)
- WebLogic Admin password (password)
- WebLogic Application Server name (wsam_server) - Name of the server you want to use as the Managing Server. If a server with this name already exists then it will be deleted and recreated.
- WebLogic Application Server port (7001) - Gather any valid TCP/IP port from 1 to 65535. Make sure this port is not in use.

Install DB2

- Gather the following user account information for DB2:

  Note: The following requirements apply to the admin, fenced (*UNIX-only*), and instance users that you define for DB2:
  - Windows: create a new user.
  - UNIX: create a new user or use a preexisting user. You must define a group name and home directory when you create a new user.
- Gather the admin user account information for DB2:
  - **User Name** - Type the user name for the DB2 Admin user account.This string can have one to eight characters, without spaces. The installation creates the user account. This account has full DB2 privileges.
  - **Password** - Type the password to correspond with the DB2 Admin user account. This string can have one to eight characters, without spaces. The string must not begin with a number or an ampersand. The only valid symbols are: @, #, $, &.
  - **Group Name** - (*UNIX-only*) Type the group name. This string can have one to eight characters, without spaces.
  - **Home Directory** - (*UNIX-only*) Type the home directory for the user type admin. This string can have one to 64 characters, without spaces.
- (*UNIX-only*) Gather the fence user account information for DB2:
  - **User Name** - Type the user name for the DB2 fenced user account. This string can have one to eight characters, without spaces. The installation creates the user account, if it does not already exist. This account has privileges to administer the database.
  - **Password** - Type the password to correspond with the DB2 fenced user account. This string can have one to eight characters, without spaces. The string must not begin with a number or an ampersand. The only valid symbols are: @, #, $, &.
  - **Group Name** - (*UNIX-only*) Type the group name. This string can have one to eight characters, without spaces.
  - **Home Directory** - (*UNIX-only*) Type the home directory for the fenced user. This string can have one to 64 characters, without spaces.
- Gather the instance user account information for DB2:
  - **Instance Name** - Type the name of the DB2 Instance. This string can have one to eight characters, without spaces.
  - **User Name** - The user name will be the same as the instance name.

    Note: If you elect to create an instance user, then the instance name will be used to create this user. And the same user will own the Managing Server file system. You need to log in as this user to start the Managing Server. For example, db2inst will be the instance name and the JDBC user. Db2inst is am_user in this case.
  - **Password** - Type the password to correspond with the DB2 Instance user account. This string can have one to eight characters, without spaces. The string must not begin with a number or an ampersand. The only valid symbols are: @, #, $, &.
  - **Group Name** - (*UNIX-only*) Type the group name. This string can have one to eight characters, without spaces.
  - **Home Directory** - (*UNIX-only*) Type the home directory for the instance. This string can have one to 64 characters, without spaces.

- Gather the installation image location information for IBM DB2 v8.1 fixpack 3.

  Note: Copy and untar images from the CD-ROM to your local drive. Installer does not support the CD-ROM installation. For example, select a directory that starts with ″ese″ and which has the license.txt file. Installer supports only DB2 v8.1 fixpack 3 images. Make sure that images you copy to your local drive have the correct read/write/execute permissions. At times when copying images from a CD, all the images becomes read-only.

Use existing DB2

If you are using a database installed on the same machine as the Managing Server, and it is DB2, gather the following information before you run the graphical installer:

- DB2 User name (amuser)
- DB2 Password (amuser password)
- DB2 instance (db2inst1 - for UNIX)(DB2 - for Windows)
- Fully qualified JDBC Driver jar file (/home/db2inst1/sqllib/java12/db2java.zip - for UNIX) (C:\Program Files \IBM\SQLLIB\java\db2java.zip - for Windows)

Use existing Oracle

If you use Oracle, gather the following information before you run the graphical installer:

- Oracle host name

  Gather the fully qualified host name.

  Do not include a protocol in the host name. For example, use

  myserver.ibm.com, not https://myserver.ibm.com
- Oracle port (1521)

  Gather a port number that you specified during Oracle installation.
- Oracle SID (octigate)

  Gather the Oracle system identifier number for the database, refer to "Using Remote Oracle" on page 19 if you are using remote Oracle database.
- JDBC User (amuser)

  Gather the name of an existing user of the Oracle database.
- JDBC User password (ampassword)

  Gather the name of an existing password for the Oracle database.
- Fully qualified JDBC Driver classes zip file (/opt/oracle/jdbc/lib/classes12.zip)
- Fully qualified JDBC Driver charset file (/opt/oracle/jdbc/lib/nls_charset12.zip)

In addition, if you are using an Oracle database installed on the same machine as the Managing Server, then you must gather the following information before you run the graphical installer. (If you are using Oracle remotely, you will need this information for setting up the remote database:)

- UNIX username that can run sqlplus (oracle)
- Tablespace name (for use with the Managing Server) (wsam_ts)
- DBA User name (system)
- DBA User password (manager)

Run Installer

Before you install the Managing Server, make sure you follow the procedures for upgrading, if appropriate ("Upgrading Considerations" on page 31,) and for preparing to install ("Preparing to Install" on page 12) and follow the instructions found earlier in this chapter.

Note: When upgrading Managing Server if you want to migrate data , **make certain your input is 'No' when entering the value for re-initializing the database by the installer.**

Note: If you are using a remote database, make sure that you have followed the instructions on "Using a Remote Database" on page 18 before you install the Managing Server.

Note: It is recommended that you delete WebSphere managed variable DB2_JDBC_DRIVER_PATH (If you are planning to use DB2) or ORACLE_JDBC_DRIVER_PATH (If you are planning to use Oracle).

Note: Make sure the Application Server type and version, and the operating system type and version you are using are supported. (If the installation environment does not meet the prerequisites, the installer prerequisite check will fail and you will be unable to continue the installation. If you wish to proceed with the installation, you can bypass the prerequisite check by passing the parameter "-force" to install-MS.sh.

Note: The installer will create log files in (/tmp/ibm_am_installer_ms/ - for UNIX) (%TEMP%\ibm_am_installer_ms\ - for Windows) during the installation. After installation is complete, you can find a copy of the logs in the <am_home>/logs directory.

Note: Embedded DB2 installation logs can be found in /tmp/db2setup.log (UNIX) or <My Documents directory of a user>\DB2LOG\db2.log (Windows). Embedded DB2 and WAS trace logs can be found in /var/ibm/tivoli/common/BWM/logs/trace-install.log (UNIX-ONLY) or <Program Files>\IBM\tivoli\common\BWM\logs\trace-install.log.

Note: If embedded DB2 or WebSphere fails during the installation, then you need to manually uninstall both of them, and then rerun the installer. Instructions are defined in the "How to uninstall DB2 (UNIX-only)" on page 45 or "How to uninstall DB2 (Windows only)" on page 45.

Note: If the pre-installation steps for users "amuser" and "admin" were not correctly performed, the installer will not open, and will display errors in the console.

Note: For UNIX - If running the installation from a remote machine, enter: **xhost + <hostname>** on the machine on which you are installing the Managing Server.

To install the Managing Server (UNIX-only):

1. Log in as the root user.
2. Start your J2EE server.

   Note: If you are in an ND environment then you must start the following.
   - Deployment Manager

- Node Agent
- WebSphere instances to be monitored

3. Source the profile for the "amuser" user described in "Setting the Environment" on page 20. Or if you wish, set the environment variables appropriate to your environment manually.

```
source ~amuser/.profile
```

This command may vary according to the shell you are using.

4. Refer to "Setting the Environment" on page 20 to verify this has completed correctly, by issuing the following commands:

For WebSphere:

```
    echo $JAVA_HOME
    echo $PATH
```

For WebLogic:

```
echo $WL_HOME
echo $JAVA_HOME
    echo $PATH
```

Make sure that the output from the echo command matches your inputs.

5. Locate the file MSInstall.tar in the installation media. Go to the directory where you downloaded MSInstall.tar and extract the contents to a temporary directory:

```
mkdir /tmp/wsaminst
cp MSInstall.tar /tmp/wsaminst
cd /tmp/wsaminst
tar xf MSInstall.tar
```

6. If you want to perform an Interactive (GUI) install go to Step 6a. If you want to perform a non-Interactive (silent) install go to step 6b.

   a. If running the installation on a remote server, export the display to your local workstation using the following command:

   ```
       DISPLAY=<workstation>:0; export DISPLAY
   ```

   Run installer (You must be in this directory of the installer to work properly):

   ```
   cd /tmp/wsaminst/Installer-MS/bin/
   ```

   For WebSphere:

   ```
   sh install-MS.sh
   ```

   For WebLogic:

   ```
   sh install-MS.sh -wls
   ```

   Note: Make sure that noclobber option is turned off in your shell profile. Use the following command to turn it off:

   ```
   set +o noclobber
   ```

   b. Create a copy of the sample response file.

   ```
   cd /tmp/wsaminst/Installer-MS/etc
   ```

   Note: For WebSphere, select one of the sample response files according to your needs.
   - msInputs_Sample.txt (to use existing WAS and DB2)
   - msInputs_Install_WAS.txt (install WAS and Managing Server)
   - msInputs_Install_DB2.txt (install DB2 and Managing Server)

- msInputs_Install_WAS_And_DB2.txt (install WAS, DB2 and Managing Server)

Note: For WebLogic, select the response file msInputs_Sample.txt.

```
cp msInputs_Sample.txt msInputs.txt
```

Edit the response file msInputs.txt. The parameters required are documented within the text file.

Run the installer in silent mode.

```
cd /tmp/wsaminst/Installer-MS/bin/
```

```
For WebSphere: sh install-MS.sh -silent ../etc/msInputs.txt
```

```
For WebLogic: sh install-MS.sh -wls -silent ../etc/msInputs.txt
```

Note: Make sure that noclobber option is turned off in your shell profile. Use the following command to turn it off:

```
set +o noclobber
```

To install the Managing Server (Windows-only):

1. Log in as the Administrator user.
2. Start your J2EE server.

   Note: If you are in an ND environment then you must start the following.
   - Deployment Manager
   - Node Agent
   - WebSphere instances to be monitored
3. Refer to "Setting the Environment" on page 20 to verify this has completed correctly, by issuing the following commands:

   For WebSphere:

   ```
   echo %JAVA_HOME%
   echo %PATH%
   ```

   Make sure that the output from the echo command matches your inputs.
4. Locate the file MSInstall.tar in the installation media. Go to the directory where you downloaded MSInstall.tar and extract the contents to a temporary directory, for example, C:\temp\wsaminst.
5. If you want to perform an Interactive (GUI) install go to Step 5a. If you want to perform a non-Interactive (silent) install go to step 5b.

   a. Open the command-line console:

      Note: For Windows 2003, change the user to install using the following command:

      ```
      change user /install
      ```

      Run installer (You must be in this directory of the installer to work properly):

      ```
      cd C:\temp\wsaminst\Installer-MS\bin\
      ```

      For WebSphere:

      Note: If you have multiple IP's then edit the file IPAddress_List.txt and add all the IP addresses including local host IP separated line by line.

      ```
      install-MS.bat
      ```

   b. Create a copy of the sample response file.

```
cd C:\temp\wsaminst\Installer-MS\etc
```

Note: For WebSphere, select one of the sample response files according to your needs.

- msInputs_Sample.txt (to use existing WAS and DB2)
- msInputs_Install_WAS.txt (install WAS and Managing Server)
- msInputs_Install_DB2.txt (install DB2 and Managing Server)
- msInputs_Install_WAS_And_DB2.txt (install WAS, DB2 and Managing Server)

```
copy msInputs_Sample.txt msInputs.txt
```

Edit the response file msInputs.txt. The parameters required are documented within the text file.

Note: For all the paths, the separator should be a double back-slash (\\) instead of single backslash; and all paths should be converted into non-space format, e.g. C:\Program Files\ should be converted into C:\\PROGRA~1\\.

Run the installer in silent mode.

```
cd C:\temp\wsaminst\Installer-MS\bin\
```

```
For WebSphere: install-MS.bat -silent ..\etc\msInputs.txt
```

Post-installation steps (for WebSphere and UNIX only)

Based upon your decision to use either an existing remote/local or the new embedded installer version of the database, perform these instructions on that machine. Include in the profile of the "amuser" (likely found under /home/amuser/.profile, may be at different location for your environment) use the following:

- Source the files db2profile, which is located in the sqllib subdirectory of the DB2 home directory respectively.
- Export WAS_HOME
- Export JAVA_HOME
- Modify your PATH to include JAVA_HOME

The following lines are an example of the code to insert into the profile. If it already exists you don't have to do this:

```
WAS_HOME=<WAS Installation Directory>; export WAS_HOME
(the one you specified during the installation)
JAVA_HOME=${WAS_HOME}/java; export JAVA_HOME
PATH=${JAVA_HOME}/bin:${PATH}; export PATH
    if [ -f /home/db2inst1/sqllib/db2profile ]; then
    .  /home/db2inst1/sqllib/db2profile
fi
```

Note: All references to db2inst1 should be replaced with the appropriate DB2 instance name.

Oracle

No updates required.

Example Configurations

The following is an example of a profile for WebSphere and DB2 on Linux:

EXAMPLE profile for user ″amuser″ for DB2 on Linux
WAS_HOME=<WAS Installation Directory>; export WAS_HOME (the one you specified during the installation)
JAVA_HOME=${WAS_HOME}/java; export JAVA_HOME
PATH=${JAVA_HOME}/bin:${PATH}; export PATH
if [-f /home/db2inst1/sqllib/db2profile]; then   . /home/db2inst1/sqllib/db2profile fi

Upgrading Considerations

Migrating Data

To complete an upgrade of the Managing Server to v3.2 from any earlier version, you must migrate the data in the database.

Performing a Migration

These instructions describe how to migrate your data from v3.1 so that they are compatible with the Application Monitor v3.2.

Note: First BACKUP the existing octigate database so you preserve all your data under the previous schema.

To migrate the data of the Application Monitor database to v3.2 from v.3.1:

1. Make sure your Managing Server components are not running.
2. Connect to WSAM database, for example:

   ```
   db2 connect to octigate
   ```

3. Execute data migration scripts: You should be logged in as user "amuser".
   * Excute SQL script:
     - For DB2 database, do db2 connect to octigate:

       ```
       db2 —tf $AM_HOME/etc/migratetables-db2.sql >
       $AM_HOME/logs/migratedb.log
       ```

     - For Oracle database, go to Oracle database server, do sqlplus:

       ```
       <am database user name>/<am database user password>@<am
       ORACLE_SID> @$AM_HOME/etc/migratetables-oracle.sql > $AM_HOME
       /logs/migratedb.log
       ```

     Note: All $AM_HOME should be replaced with real directory name.
4. Execute migration.sh found in MS_AM_HOME/bin.
5. Bring up all servers.

   Note: Log files during migration are located in $AM_HOME/logs.

Starting the Application Monitor (UNIX-only)

> **Note:** Verify that your Application Server, database, virtual frame buffer (UNIX only) and optionally HTTP server are running.

For most UNIX platforms you can verify it as follows:
1. To verify the Application Server, go to admin console to make sure your server is up.
2. To verify database is up, establish a database connection.
3. To verify Virtual Frame Buffer:
   ```
   ps -ef | grep Xvfb
   ```
4. To verify HTTP server:
   ```
   ps -ef | grep httpd
   ```

To start the Application Monitor, follow these steps:
1. Switch to user "amuser".
   ```
   su - amuser
   ```

   > **Note:** If you elected to install IBM DB2 during the installation, then amuser is the same as the Instance Name. You need to login as DB2 Instance Name.
2. Go to the bin directory where the Application Monitor is installed and run the am-start.sh script.
   ```
   cd <AM_HOME>/bin
   sh am-start.sh
   ```

   > **Note:** User amuser should have the permissions to write to a temp directory (/tmp).
3. Using the terminal window, start the Application Server by typing the commands appropriate for your Application Server:
   WebSphere

   > **Note:** Login as the user who is authorized to start WebSphere. If you are using a user other than "amuser", make sure you have a db2 profile set. If not, run /home/db2inst1/sqllib/db2profile.

   > **Note:** If the browser language being used to view WSAM is Simplified Chinese, make the following change. In $WAS_HOME/properties/encoding.properties, edit the property for zh by changing 'zh=GB2312' to be 'zh=UTF-8'.
   ```
   Export the display to wherever your virtual frame buffer is running.
   For example: export DISPLAY=<hostname>:1 (if you started Xvfb: 1)

   cd <WebSphere Install directory>/bin
           sh startServer.sh server_wsam &
   ```

   > **Note:** Substitute the name of the Application Server you are using for the Visualization Engine in place of server_wsam.

   WebLogic

   Go to your WebLogic domain directory, for example:
   ```
   Export the display to wherever your virtual frame buffer is running.
   For example: export DISPLAY=<hostname>:1 (if you started Xvfb: 1)

   cd /opt/bea/user_projects/domain/<domain>

   ./startWSAM_WebLogic.sh &
   ```

Note: Do not run startManagedWebLogic.sh, use startWSAM_WebLogic.sh instead.

Note: Starting a Managing Server through Node Manager is not supported. You need to use a script to start the Managing Server.

4. If your Web environment requires an HTTP server, and the HTTP server is not running, change directory to your HTTP Server and start it as root as follows:

   Linux:

   ```
   cd /opt/IBMHTTPServer/bin
   ./apachectl start
   ```

   AIX:

   ```
   cd /usr/    HTTPServer/bin/
   ./apachectl start
   ```

   The exact path depends on the convention used at your site.

5. To log into the monitoring console, open a browser and type in:

   ```
   http://<hostname>/am/home
   ```

   You can use the user name "admin" and UNIX password for UNIX user "admin" to log in.

   Note: If your J2EE Application Server is not configured to be served on port 80, and you have not set up an HTTP server to do so, you have to include the port number in the URL. For example, the default port that WebSphere 5.1.1 listens on port 9080.

   ```
   http://<hostname>:<port>/am/home
   ```

   Note: This port can be found in <WAS_BASE_DIRECTORY>/config/cells/<cell_name>/<nodes> /<node_name>/servers/<server_wsam>/server.xml.

   Note: Make sure your pop-up blocker is turned off.

Starting the Application Monitor (Windows-only)

Note: Verify that your Application Server, database, virtual frame buffer and optionally HTTP server are running.

1. To verify the Application Server, go to admin console to make sure your server is up.
2. To verify database is up, establish a database connection.

To start the Application Monitor, follow these steps:

1. Login as user "amuser".
2. Launch a KShell window.
   Start > Programs > Windows Services for UNIX > Korn Shell.

   Note: Do not use already existing korn shell. Instead open a new korn shell window.
   cd $WSAMBIN
   ./am-start.sh.

   Note: Through either way, the KShell window should be remained open; otherwise the WSAM server will go down.

Note: If the browser language being used to view WSAM is Simplified Chinese, make the following change. In $WAS_HOME/properties/encoding.properties, edit the property for zh by changing 'zh=GB2312' to be 'zh=UTF-8'.

3. Start a command-line console:
   Start > Run >cmd
   ```
   cd <WAS_HOME>\bin
   ```

   setupcmdline
   startserver server_wsam (The server name you gave during the installation.)

4. To log into the monitoring console, open a browser and type in:
   ```
   http://<hostname>/am/home
   ```
   You can use the user name "admin" and the password for user "admin."

   Note: If your J2EE Application Server is not configured to be served on port 80, and you have not configured an HTTP server to do so, you have to include the port number in the URL. For example, the default port that WebSphere 5.1.1 listens on is port 9080.
   ```
   http://<hostname>:<port>/am/home
   ```

   Note: Make sure your pop-up blocker is turned off.

Chapter 4. Customization

Follow the instructions below to complete the customization of your environment. For information on setting up cron jobs for maintenance, see the Operator's Guide.

Set up Email Host

The Application Monitor includes a "traps" feature that allows the user to have email messages sent when certain thresholds are reached. To have this feature work correctly, the SMTP host needs to be specified.

Note: The Performance Analysis & Reporting (PAR) section and the Traps section will not email reports without this step.

To do this, edit the file:
```
<MS_AM_HOME> /etc/md.properties
```

and specify the correct IP address of the SMTP host or hostname (A valid email server is required; contact your Email Administrator for this information) for property as:
```
smtp.host=aa.bb.cc.dd
```

where aa.bb.cc.dd should be substituted with the IP address of the SMTP host.

Set up Email Sender Address

The user needs to specify a valid email address to enable the Email Report Link/PDF feature of the Application Monitor. Set "ve.framework.email.sender" property in <AM_HOME>/etc/ve.properties with a valid email address on your own SMTP domain, for example:
```
ve.framework.email.sender=support@usca.ibm.com
```

Set up Email Port

If your Managing Server is not running on default port 80 then you need to edit two properties files AM_HOME/etc/ps1.properties and AM_HOME/etc/ps2.properties. Edit the variable ve.port=<port of the managing server>.

Set up init.d

You may skip this section if you do not want the Application Monitor to start automatically upon reboot.

Activate appropriate scripts that can start the following components automatically upon reboot in the following sequence:

1. Virtual Frame Buffer
2. DB2 or Oracle (DB2 installation may have already created this.)
3. HTTP Server
4. WebSphere
5. am

To set up the Application Monitor scripts to restart automatically, do the following:

The installation program will install a script for starting the Managing Server back end components automatically at boot time. To enable the startup script, please follow the instructions below for each platform. You must login as root or Administrator to run any of the commands.

Linux: The installation program will install /etc/rc.d/init.d/am. To enable automated startup at boot time, add am service with chkconfig command as follows:

```
/sbin/chkconfig –add am
```

AIX: The installation program will install /etc/rc.am. To enable startup by process init, add the following line to the /etc/inittab file:

```
msbackend:234:once:/etc/rc.am start
```

Solaris: The installation program will install /etc/init.d/am. To enable automated startup at boot time, you must create the links below. You may want to modify the sequence numbers (S91, K36) according to local conventions.

```
ln -s /etc/init.d/am /etc/rc2.d/S91am
ln -s /etc/init.d/am /etc/rc1.d/K36am
ln -s /etc/init.d/am /etc/rc0.d/K36am
ln -s /etc/init.d/am /etc/rcS.d/K36am
```

If you are upgrading, be sure to remove the old startup entry

```
cyna:234:once:/etc/rc.am start
```

from /etc/inittab in Solaris.

Windows: To enable automated startup at boot time, run following commands in KShell:

```
ln -s /etc/init.d/am-start /etc/rc2.d/S40WSAM
ln -s /etc/init.d/am-stop /etc/rc2.d/K40WSAM
```

Set up SNMP

If you want to set up SNMP, see the following instructions:
- Appendix A, "IBM Tivoli Enterprise Console Integration," on page 127.
- Appendix B, "BMC Patrol Integration," on page 153.

Set up Regular Database Tuning

To keep the Application Monitor performing well you may wish to tune the database periodically via a regularly scheduled cron job. For details, refer to the Operator's Guide.

Increase Linux Kernel Setting

Red Hat Intel/Linux Managing Server: If you are using a Linux Managing Server, you should change the MSGMNI kernel variable. This is an IBM recommendation for DB2 performance tuning.

You can issue (as root), the following command to set it to 1024.

```
sysctl –w kernel.msgmni =1024
```

To check the current setting, use:

```
ipcs -l
```

Configuring Your Firewall

Follow the instructions below to configure the firewall between the Managing Server and the Data Collector.

Note: If you do not have a firewall between your Managing Server and your Data Collector, please ignore these instructions.

To configure your firewall:
1. Open the following ports on the firewall from both directions: 9103-9104 9111 9118-9123 9126 9129 8300 8200. (Assuming you used the default settings.)
2. If you want to monitor Web Server proxies, you need to open port 80 and port 443.

Note: You can use the optional component, Port Consolidator, to minimize the number of ports required.

For further information, see "Configuring Your Firewall" on page 115.

Configuring Managing Server for Multiple Network Cards and NAT

If Managing Server should always expose a specific IP to all Data Collectors:
1. On the Managing Server side, in setenv.sh (in <MS_AM_HOME>/bin/), set the KERNEL_HOST01 and KERNEL_HOST02 to the IP address of the Managing Server.
2. On the Managing Server side, in wdctl.sh, klctl.sh and psctl.sh (in <MS_AM_HOME>/bin/), add a java system property "java.rmi.server.hostname" to the java command line in the "start" section of the script and set it to IP address of the Managing Server.
3. You need to edit the <MS_AM_HOME>/etc/ve.properties file's kernel.codebase value to point to the right IP address. This also impacts DHCP where you need to hardcode the dynamic DNS hostname rather than an IP address in the <MS_AM_HOME>/etc/ve.properties file.
4. In addition, if Managing Server was installed on multiple boxes, make the above changes on all the boxes where Managing Server is installed.
5. On the Data Collector side, in the datacollector.properties file, make sure that the kernel.codebase and kernel.rfs.address properties have the right IP address of Managing Server.
6. On the Data Collector side, in the datacollector.policy file, make sure that the socket permissions (java.net.SocketPermission) are granted to the right IP address of Managing Server.

If Managing Server needs to expose different IP address to different Data Collectors:
1. On the Managing Server side, in setenv.sh (in <MS_AM_HOME>/bin/), set the KERNEL_HOST01 and KERNEL_HOST02 to the fully qualified domain name of the Managing Server (for example qaapp-lnx-s01.usca.ibm.com).

2. On the Managing Server side, in wdctl.sh, klctl.sh and psctl.sh ((in <MS_AM_HOME>/bin/), add a java system property to the java command line in the "start" section of the script and set it to the fully qualified domain name of the Managing Server.

3. In addition, if Managing Server was installed on multiple boxes, make the above changes on all the boxes where Managing Server is installed.

4. On the Data Collector side, in the datacollector.properties file, make sure that the kernel.codebase and kernel.rfs.address properties have the right IP address (of fully qualified hostname) of Managing Server.

5. On the Data Collector side, in the datacollector.policy file, make sure that the socket permissions (java.net.SocketPermission) are granted to the right IP address (of fully qualified hostname) of Managing Server.

6. Make sure that on the Data Collector side, the fully qualified host name of Managing Srever can be resolved to the correct IP address (can use ping to verify this).

Configuring Data Collector for Multiple Network Cards and NAT

If Data Collector needs to expose a specific IP to the Managing Server.

1. If Data Collector is not using Port Consolidator:

   a. Specify a system property "java.rmi.server.hostname" to the AppServer and set it to IP address of the Data Collector.

   b. Make sure that Managing server can access the IP address of the Data Collector (can verify by doing a ping).

2. If Data Collector is using Port Consolidator:

   a. Specify a system property "java.rmi.server.hostname" to the AppServer and set it to IP address of the Data Collector.

   b. Specify a system property "java.rmi.server.hostname" in the "start" section of the script used to start Port Consolidator and set its value to IP address of the Data Collector.

   c. Make sure that Managing server can access the IP address of the Data Collector (can verify by doing a ping).

Configuring Managing Server for Large Number of Data Collectors

If the Managing Server is run with a large number of Data Collectors, the out of the box configuration settings for the Managing Server won't be sufficient to handle all the Data Collectors, and the Managing Server may throw OutOfMemory exceptions for different components. To handle this, the Managing Server needs to be configured as below. On the Managing Server side, in setenv.sh(in <MS_AM_HOME>, change the following properties):

HEAP_MAX_SIZE_PS to 1024

HEAP_MAX_SIZE_ARCHIVE_AGENT to 1024

HEAP_MAX_SIZE_KERNEL to 512

Before changing these configurations make sure that the Managing Server machine has sufficient memory to handle the increased heap requirements of the components.

Configuring Simplified Chinese as the Browser Language

If the browser language being used to view WSAM is Simplified Chinese, make the following change. In $WAS_HOME/properties/encoding.properties, edit the propertyfor zh by changing 'zh=GB2312' to be 'zh=UTF-8'. In order for this change to take effect, the server must be restarted.

Chapter 5. Troubleshooting

The following information will help you in troubleshooting problems with your installation.

Test Database Connection

If the installation appears to succeed, you should test the database connection.

WebSphere (DB2 or Oracle)

The installation program creates a data source. The following procedure tests if the installation was successful.

Note: In the case of an Oracle database, you have to perform the following steps:

1. In the WebSphere administrative console, expand the tree Security > JAAS Configuration > J2C Authentication Data.
2. Click on WSAM J2C Authentication data entry.
3. Click Apply.
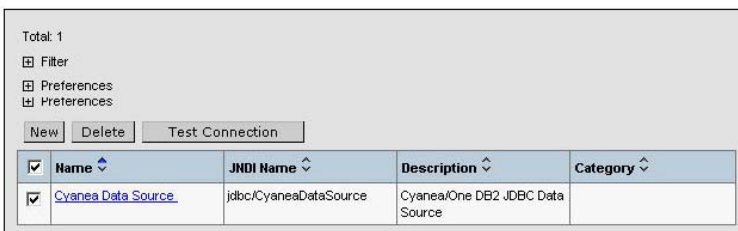
To test the database connection:

1. In the WebSphere administrative console, expand the tree Resources > JDBC Providers.
2. Select the name of the JDBC provider.
3. At the bottom of the page, select Data Sources.
4. Place a checkmark in the box next to the correct data source.

Figure 2. Data Sources

5. Click **Test Connection** to verify that WAS can connect successfully to the octigate database. If connected successfully, a message will display at the top of the screen.

   If the test fails, try verifying the following:

   • Try to connect to the octigate database manually using the DB2/Oracle command-line processor.

   • Verify the user name, password, and database name. If using Oracle, check to make sure the URL has the following format:

```
jdbc:oracle:thin:@<db host>:<port>:<SID>
```
For example:
```
jdbc:oracle:thin:@perfdb-sun-so1.ibm.com:1521:octigate
```
- Verify that the user which is used to start the WebSphere console has a DB2 profile as part of its profile.

Authentication

If your passwords have expired or you have changed the passwords, you need to modify your password in <am_home>/bin/setenv.sh and in the WebSphere data source.

WebLogic (Oracle)

Test connection utilities by BEA for WebLogic are available for testing JDBC connections from the command line:
```
http://e-docs.bea.com/wls/docs61/jdbc/troubleshooting.html
```
```
http://e-docs.bea.com/wls/docs81/jdbc/troubleshooting.html
```

Database Problems

If the Managing Server uses an Oracle database and you see SQL syntax errors, check ve.properties file and make sure com.cyanea.octigate.database.ORACLE_8I is set to Y. If not, set the property to Y, and restart the VE. For example:
```
com.cyanea.octigate.database.ORACLE_8I=Y
```

If you are using WebLogic as the Application Server for the Managing Server and you see URL errors, check ve.properties file and make sure com.cyanea.ve.framework.CONTEXT_PATH_REDIRECT is set to Y. If not, set the property to Y, and restart the VE. For example:
```
com.cyanea.ve.framework.CONTEXT_PATH_REDIRECT=Y
```

Global Security=On

The Application Monitor does not support Global Security=on. If you have Global Security=on in your environment, you will experience pop-up Security Alerts while browsing pages from the Managing Server. To proceed, click Yes and continue browsing.

Viewing the Error Logs

The following is a list of additional error logs created by the Application Monitor.

Visualization Engine (VE) -am_system.log (Log messages from the VE), <WAS_BASE_DIRECTORY>/logs/<server_wsam>/SystemOut.log.

Kernel Log - am_kl1.log (1st instance) and am_kl2.log (2nd instance)

Publish Server Log - am_ps1.log (1st instance), am_ps2.log (2nd instance), alert.log, and am_ps_audit.log (This file logs the trap- related messages from the Publish Server.)

Global Publish Server Log - am_sam.log

Archive Agent Log - am_aa1.log (1st instance) and am_aa2.log (2nd instance)

Polling Agent Log - am_pa.log

Audit Messages - am_audit.log

Message Dispatcher Log - am_md.log

To Change Username/Password for WSAM

To change username/password for admin user:

1. Create a local UNIX account associated with the new user, <newusername>.

    Note: To change the password for the admin user without changing the username, change the password of the user on the local OS.

2. Update USERS table in WSAM database by doing:

    For DB2:

    ```
    db2 connect to <wsam database>

    db2 "update users set username = '<newusername>', ext_user = '<newusername>'
    where username = 'admin' and ext_user = 'admin'"
    ```

    For Oracle:

    ```
    export ORACLE_SID=<wsam sid>

    sqlplus <wsam username>/<wsam password>

    update users set username = '<newusername>', ext_user = '<newusername>'
    where username = 'admin' and ext_user = 'admin'
    ```

    Note: You will not be able to change the amuser name of an oracle or db2 database as all of the database information will only be stored in their schema, and changing the username would make them appear to lose all of their data. We recommend you change the password of the amuser periodically.

3. You must also modify the <am home>/bin/setenv.sh and edit the parameters below.

    ```
    JDBC_USER=<newusername>

    JDBC_PASSWORD=<newpasword>
    ```

4. You also need to change the ownership of the <am_home> direcotry using below command if you want to start your processes as the new user.

    ```
    chown -R <newusername>:<newgroupname>  <am home>
    ```

To change ″amuser″ user to a new username in WebSphere:

1. Login to the WebSphere admin console where VE is installed.

2. Expand Resources > JDBC Providers > Choose the JDBC Provider for WSAM > Data Sources > Choose WSAM DataSource (WSAMDataSource) > J2C Authentication Data Entries > Choose WSAM J2C Authentication Data Entries > In User ID field, type in the new user, in password field, type in the password corresponding to the new user. > Click on OK > Save the change > restart the Application Server.

    Note: J2C authentication entry can be found in a intapp-aix-s01/server_wsam format. Where intapp-aix-s01 is your node name, and server_wsam is your configured VE server name.

To change the ″amuser″ user to a new username in WebLogic:

1. Login to the WebLogic admin console where VE is installed.

2. Expand Services > expand JDBC > Connection Pools > select the JDBC connection pool for WSAM and click it. > In the properties box, modify the value of the old user to the new username; in the password field, type in the corresponding password, in the confirm password field, type in the same password again. > click on "Apply" > restart WebLogic.

Scripts execution authentication on Windows

By default, the Installer grants the right of executing Managing Server control scripts to all the members of the group Administrators on Windows platforms. It allows any of them to start and stop Managing Server by double-clicking the shortcuts on Desktop or by running the scripts in a KShell console. However, if two or more users run the scripts in an improper order, the lock file may fail. Before starting the server, it's required to make sure that there are no pid files under /tmp directory that created by other users during previous operations. As another option, the right of executing these scripts can be restricted to one user by changing the ownership and mode of these files with chown and chmod commands. For the Visualization Engine (VE) component running on WebSphere, it is recommended that the same Windows account is used to operate the Managing Server.

Port 9090 Conflicts error on AIX

There is a port number conflict between the WebSphere Application Server Administrative Console and WebSM service on AIX. Both use port 9090. WebSM is a tool that is useful to administrators who manage many AIX computers. WebSphere Application Server Administrative Console is used to administer WebSphere Application Server. The port 9090 conflict on AIX is a known WebSphere Application Server issue. Ensure that no other applications are using this port. If you see the following error when you start your Managing Server then please follow the steps to fix it. Error: Failed to Start Transport on host , port 9090. The most likely cause is that the port is already in use. Please ensure that no other applications are using this port and restart the server. com.ibm.ws.webcontainer.exception.TransportException: Failed to start transport http: java.net.BindException: Address already in use.

To modify the port number that is used by WebSphere Application Server Administrative Console, perform the following steps:

1. Disable WebSM Service by issuing the following command:

   ```
   # /usr/websm/bin/wsmserver -disable
   ```

   Note: Failure to complete this step before installing WebSphere Portal results in an incomplete deployment of portlets.

2. Install WebSphere Application Server and WebSphere Portal (including fix packs and interim fixes).

3. Modify the WebSphere Application Server Administrative Console port number 9090 in the following files to the desired port for the administrative console. Refer to WebSphere Application Server documentation for more information.
   - was_root/config/cells/cell_name/nodes /node_name/servers/server1/server.xml
   - was_root/config/cells/cell_name/virtualhosts.xml

4. Restart the WebSphere Application Server and WebSphere Portal servers.

5. Enable WebSM Service by issuing the following command:

   ```
   # /usr/websm/bin/wsmserver -enable
   ```

How to uninstall DB2 (UNIX-only)

To uninstall DB2 follow the instructions (as Root):

1. Source <instance-user-homedir>/sqllib/db2profile # sets $DB2DIR etc
2. $DB2DIR/instance/dasdrop
3. $DB2DIR/bin/db2ilist # list all DB2 instances
4. For each instance above: $DB2DIR/instance/db2idrop <instance>
5. From DB2 install directory: db2_deinstall #remove actual installed bits
6. Remove DB2 admin, instance, fence users, and delete home directories. On Solaris, run: userdel -r <login name> # -r removes home directory. This should remove entries from /etc/passwd and etc/shadow
7. rm /var/db2 if no other version of DB2 is installed.
8. Delete DB2-related lines from /etc/services (text file).
9. On Solaris, at least: check size of textfile /var/adm/messages; DB2 can sometimes make it expand to 100s of MBs.
10. Remove any old db2-related files in /tmp (logs etc)
11. Make sure that your $DB2DIR is empty. If its not then that means db2 uninstall is not successful.

How to uninstall DB2 (Windows only)

1. Go to Start->Settings->Control Panel->Add Remove Program->DB2 Enterprise Server Edition.
2. Click on the remove button to uninstall DB2.
3. Remove the users created by the DB2. For example: db2Admin and/or amuser.
4. Stop all the DB2 processes from the Task Manager tab.
5. It is recommended that you reboot the system.

How to uninstall WebSphere

Click on <websphere installation directory>/_uninst/Uninstall.exe and follow the steps:

1. Delete <websphere installation directory>.
2. If you are using windows then its recommended to reboot the system.

Chapter 6. Uninstalling the Managing Server

The following instructions describe how to uninstall the Managing Server.

Note: Prior to uninstalling the Managing Server, make sure you do the following:

- Disable all Data Collectors. See Chapter 11, "Uninstalling the z/OS Data Collector," on page 93 for instructions on disabling Data Collectors.
- Stop the Managing Server.

Remove the Application Monitor Database

DB2

1. Login as the DB2 admin user.
2. Check the databases on the box using,

   ```
   db2 list db directory
   ```
3. Drop the database by issuing the command:

   ```
   db2 drop db octigate
   ```

Oracle

To remove the database, use the command line tool:

```
dbassist
```

Uninstall the J2EE Application Server

WebSphere

1. Launch WebSphere Admin Console.
2. Expand Applications.
3. Click Enterprise Applications.
4. To stop the Enterprise Application, select the octigate application.
5. Click Stop.
6. To uninstall the Enterprise Application, select the octigate application.
7. Click Uninstall.
8. To uninstall the Data Source, expand Resources.
9. Select JDBC Providers.
10. Select DB2 Legacy CLI-Based Type 2 JDBC Driver.
11. Select Data Sources.
12. Select WSAM Data Source.
13. Click Delete.
14. Go to the <Websphere_home>/bin directory.
15. Issue the command:

    ```
    stopServer.sh <wsam_server>
    ```

WebLogic

1. Uninstall the octigate.ear file.
2. Uninstall the Data Source.
3. Remove the WSAM CLASSPATH and WSAM Java security policy.
4. Change the Java memory option back to the original setting from the WebLogic start up script.

Shutting Down the Managing Server

WebSphere

In order to shut down the Managing Server you need to shut down the am components, including the Application Monitor, WebSphere, HTTP server, and DB2.

To shut down the Application Monitor:

1. Login as the am user:

   ```
   su - amuser
   ```

   Note: If you elected to install IBM DB2 during the installation, then amuser is the same as the Instance Name. You need to login as DB2 Instance Name.
2. Go to the <am home> directory:

   ```
   cd <am_home>/bin
   ```
3. Stop the Application Monitor:

   ```
   ./am-stop.sh
   ```

To stop WebSphere:

1. To stop WebSphere, go to the <Websphere_home>/bin directory.
2. Issue the command:

   ```
   stopServer.sh <wsam_server>
   ```

   or issue the command:

   ```
   killall java
   ```

   Note: You may want to record the wsam_server PID and issue kill commands for that PID; as there may be other Java processes running such as another WebSphere Application Server.
3. To check for Java processes, issue the command:

   ```
   ps -ef | grep java
   ```

To stop the HTTP server:

1. Go to the HTTP server home directory:

   ```
   cd <http server home>/bin
   ```
2. Issue the command:

   ```
    ./apachectl stop
   ```
3. To check if the server is down, issue the command:

   ```
   ps -ef | grep http
   ```

To stop DB2:

1. Login as the DB2 instance owner.

2. Issue the command:
   ```
   db2stop
   ```
3. To check if DB2 is down, issue the command:
   ```
   ps -ef |grep db2
   ```

   Note: You must take the DB2 server down last. When restarting, you must bring the DB2 server up first in the process.

WebLogic

1. Go to <am_home>/bin directory where am_home is the directory where the Application Monitor is installed.
2. Issue the command:
   ```
   am-stop.sh
   ```

Uninstall the Application Monitor Files

The following instructions describe how to uninstall the Application Monitor files.

To uninstall the Application Monitor files:
1. Login as root, and remove <managing server installation directory>.
2. If you added the line kernel.msgmni=1024 in /etc/sysctl.conf, remove it.
3. For Linux: If you copied the ″am″ script to /etc/rc.d/init.d, remove it.
   For AIX: If you copied the ″am″ script to /etc, remove it.

Part 3. The Data Collector for z/OS

Chapter 7. Preparing to Install

Planning Your Installation

The following information will help you plan the installation of the z/OS Data Collector.

Platform prerequisites

Table 4. z/OS Data Collector Prerequisites

Operating System	Application Server	JDK	Optional Software
z/OS 1.2 - 1.6	WebSphere 5.0.2.014, 5.1.0.004	JDK 1.3 (cm131s-20041015) for WebSphere 5.0.2 JDK 1.4 (cm142-20040917) for WebSphere 5.1	MQ5.3.1, DB2 7.1(0311),DB2 7.0 Universal Driver

Warning: Installing the Data Collector into the Admin Console server (non-ND environment), Node Agent, or Deployment Manager (ND environment) is not recommended. Failure to be compliant with this requirement may require deinstalling and reinstalling of z/OS WebSphere to recover the original stage of the WebSphere. In addition, all UNIX command references here are based on the bash shell.

Component Considerations

* For J2EE support, install the Java and native libraries.
* For MVS dataset, install CYN1PROC address space.

Space Management

The installation process and documentation use the /usr/lpp/wsam/<server>/ as the installation directory reference of the USS components of the Data Collector. When the Data Collector starts for the first time, it generates four files in the/usr/lpp/wsam/<server>/etc directory.

* <sysplex>.<machine name>.<LPAR name>.<server instance name>. datacollector.properties
* <sysplex>.<machine name>.<LPAR name>.<server instance name>.id
* <sysplex>.<machine name>.<LPAR name>.<server instance name>.gpsCounter.txt
* cyanea.mod

See "General" on page 63 for the usage, customization, and maintenance of these generated files. Each time the Data Collector starts, it will generate a new log file in the /usr/lpp/wsam/<server>/logs directory. The generated log files should be cleaned up (deleted) as available space dictates.

As files initially are generated to the /usr/lpp/wsam/<server>/etc directory and ongoing to the /usr/lpp/wsam/<server>/logs directory, these directories must be

READ-WRITE. This may be accomplished by mounting a unique HFS file over the /usr/lpp/wsam/<server>/ directory or by creating a symbolic link that will redirect access from the /usr/lpp/wsam/<server>/logs and /usr/lpp/wsam/<server>/etc directories to another set of directories that are READ-WRITE.

Network Considerations

If your LPAR has more than one IP address, make sure your system and/or network (DNS) are configured such that the primary IP is used for all connections between the Data Collector and Managing Server. You can use the netstat-command to check the IP address being used. Alternatively you may specify the IP to be used by Application Monitor in the WebSphere configuration via the java.rmi.server.hostname parameter in JVM Servant property in z/OS WebSphere 5. See Chapter 10, "Troubleshooting," on page 91 for more detailed information.

Installation Overview

Prerequisites

- The Managing Server must be installed and configured. See Part 2, "The Managing Server Installation," on page 7 for more detail reference.
- Review section Chapter 7, "Preparing to Install," on page 53 to ensure all necessary software and resources are in place prior to installing the Data Collector.

Overview

1. Download the software (SMP/E or non-SMP/E format).
2. Un-package/Un-tar the distributed software to the proper mainframe environment.
3. Install MVS components.
4. Install USS component.
5. Verify the files from the distributed package are indeed all there.
6. Configure Data Collector on USS side.
7. Update/Configure WebSphere variables.
8. Quick start/test of the Application Monitor.
9. Configure distinct Application Server instances.
10. Customize the Application Monitor with optional support, e.g., PMI, SMF, JDBC, and MQI.

System Access and Levels of Authority

In some environments a systems support staff person may have responsibility and access to many areas of the system such as WebSphere, MVS and Security (RACF). In other Installations the areas of responsibility will be spread across groups; in fact, these areas of responsibility may reside in distinctly different reporting structures of the business. To facilitate installation of the Application Monitor z/OS Data Collector it is important to understand there will be an update of the WebSphere Administration Console, the MVS Parmlib, Linklib and Proclib and possibly the security system (RACF) to permit definition of an authorized library. Thus, the appropriate support staff should be included in the planning and implementation process for the Application Monitor.

Chapter 8. Installation and Configuration

Unpackaging Data Collector Software

WSAM 3.2 is installed using SMP/E. Please refer to "Program Directory for IBM WebSphere Studio Application Monitor V3.2 for z/OS (GI10-3349-00)" provided with the product tape, for instructions on installing using SMP/E.

Installing the Data Collector

Defining Subsystem CYN1

DYNAMIC SUBSYSTEM DEFINITION

The above Parmlib Update will take effect with the next IPL of the system and is permanent. An IPL of the system is not required to dynamically add a subsystem. The following command will define the CYN1 subsystem without an IPL and will remain in place until the next IPL:

Note: For MVS Dataset update, perform a whole new replacement of both libraries scynauth and the linklist.

```
SETSSI  ADD,SUBNAME=CYN1
```

PARMLIB UPDATE

Update the SYS1.PARMLIB(IEFSSNxx) used in your installation to include the statement:

```
SUBSYS SUBNAME(CYN1)
```

RACF UPDATE

Installations have a significant number of options they can choose to enable started tasks and authorize them with RACF. Usually a started task must have an RACF association with either a user or a group as well as an entry in the Started Class Table. This must be done in accordance with your installations specifications to permit functioning of the CYN1 subsystem and SNTP started task. A possible solution to this would be to issue the RACF commands:

```
RDEF STARTED (CYN1*) OWNER(STCRACF) STDATA(USER(STCRACF) TRACE(YES))
SETROPTS REFRESH RACLIST(STARTED)
```

The Userid associated with the started tasks must have RACF access to the MVS libraries installed in the subsequent steps.

PROCLIB UPDATE

Locate the file: CYN.SCYNPROC. Either concatenate this file to the JES2 procedure PROC00 statement or copy the members from CYN.SCYNPROC into a dataset that is already part of the JES2/PROC00 DD statement.

Update

Customizing SMF

Authorizing Data Sets and Updating the Linklist: Update SYS1.PARMLIB(LNKLSTxx) to include CYN.SCYNAUTH in the LNKLST concatenation or via the LNKLST statement in the appropriate PROGxx member of

SYS1.PARMLIB. Update SYS1.PARMLIB to define CYN.SCYNAUTH as an authorized library either via the IEAAPFxx or PROGxx members.

Note: If you use the IEAAPFxx option, simply add a line that contains CYN.SCYNAUTH volser
where volser is the volume name the library was installed on.
If you use PROGxx, simply add lines that contain

```
APF  ADD  DSNAME(CYN.SCYNAUTH)  VOLUME(volser)
    LNKLST ADD NAME(LNKLST00) DSN(CYN.SCYNAUTH) VOLUME(volser)
```

where volser is the volume name the library was installed on.

Installing the IEFU83 Exit: Update SYS1.PARMLIB(SMFPRMxx) to enable the SMF exit IEFU83 and recording of SMF type 120 records. An example of an entry to enable an IEFU83 exit and recording of SMF type 120s is:

```
SYS(NOTYPE(14:19,62:69),EXITS(IEFU83,IEFU84,IEFACTRT,IEFUSI,IEFUJI,IEFU29),
    NOINTERVAL,NODETAIL)
SUBSYS(STC,EXITS(IEFU29,IEFU83,IEFU84,IEFUJP,IEFUSO,IEFACTRT))
```

If you currently do not have a SYS and/or SUBSYS statement you must include at a minimum:

```
    SYS(TYPE(120),EXITS(IEFU83))
    SUBSYS(STC,EXITS(IEFU83))
```

If your installation already has an IEFU83 exit, the MVS command SETPPROG may be used to create a "cascade effect" of calls to multiple yet distinct modules that will receive control, sequentially, to view/process the SMF records.

If your installation uses dynamic Exits, update SYS1.PARMLIB(PROGxx) with the following commands:

```
EXIT ADD EXITNAME(SYS.IEFU83) MODNAME(CYN1FU83) DSNAME(CYN.SCYNAUTH) FIRST

EXIT ADD EXITNAME(SYSSTC.IEFU83) MODNAME(CYN1FU83) DSNAME(CYN.SCYNAUTH) FIRST
```

If your installation does not use dynamic Exits, update SYS1.PARMLIB(COMMNDxx) with the following commands:

```
SETPROG EXIT,ADD,EX=SYS.IEFU83,MOD=CYN1FU83,DSN=CYN.SCYNAUTH,FIRST

SETPROG EXIT,ADD,EX=SYSSTC.IEFU83,MOD=CYN1FU83,DSN=CYN.SCYNAUTH,FIRST
```

Initializing MVS: Depending upon the options you selected when installing the CYN1 subsystem, installing the IEFU83 exit, authorizing the cyn.scynauth library and adding cyn.scynauth to the active Linklist, an IPL may be required.

Customizing the CYN1 Subsystem for SMF Collection (Optional):   In order to collect SMF information for all the zWAS server instances on an LPAR, it may be necessary to customize parameters that control the building of in-core repository tables in CYN1PROC's address space. These parameters indicate the maximum number of zWAS server instances, the sizes of the bean section, the bean method section, the web application section, and the servlet section pools. So, for example, if you're running more zWAS server instances than the maximum allowed, then CYN1PROC's maximum zWAS server instances allowed parameter must be changed, and the other CYN1PROC parameters may require tuning too.

The CYN1 subsystem uses address space storage to store SMF information collected from the various WebSphere for z/OS Application Server instances running in the same LPAR. SMF statistics comprise server and container data, bean

data, bean method data, web application data, and servlet data. These data are collected from SMF records 120 and reside in the CYN1 address space according to a hierarchical structure with the server instance as the top level. Memory for such a structure is pre-allocated by the CYN1 address space when it comes up according to a pre-defined parameter template, which specifies the maximum number of server instances, the sizes of the bean section, bean method section, web application section, and servlet section pools.

The parameter template is assembled and linked in the SCYNAUTH library and its name is of the form CYNPxxxx. By default, CYN1 will load the CYNPTEST parameter template which is provided with the SCYNAUTH library. CYNPTEST is specified as a default parameter in the CYN1 cataloged procedure (PARMS=), as follows:

//CYN1 PROC SMFWRITE='ON',PARMS='TEST' //STEP1 EXEC PGM=CYN1DRVR,REGION=0K,TIME=NOLIMIT, // PARM='&PARMS,&SMFWRITE' //** / //* */ //* PROPRIETARY-STATEMENT: */ //* LICENSED MATERIAL - PROPERTY OF IBM */ //* */ //* 5655-L42 (C) COPYRIGHT IBM CORP. 2002-2004 */ //* ALL RIGHTS RESERVED. */ //* */ //* */ //* WebSphere Studio Application Monitor */ //* VERSION 3.2 */ //* */ //* -- */ //STEPLIB DD DISP=SHR,DSN=CYN.SCYNAUTH //SYSLOG DD SYSOUT=*,FREE=CLOSE,SPIN=UNALLOC //*SYSUDUMP DD SYSOUT=*,FREE=CLOSE,SPIN=UNALLOC //*SYSABEND DD SYSOUT=*,FREE=CLOSE,SPIN=UNALLOC //*SYSMDUMP DD SYSOUT=*,FREE=CLOSE,SPIN=UNALLOC //*

Configuring the parameters statically: The source code for a generic CYNPxxxx parameter template can be found in the CYNPXXXX member of the distribution library CYN.SCYNPROC, encapsulated by sample JCL to assemble and link it into the CYN.SCYNAUTH library. You can customize the values in that member and rename it with any arbitrary suffix of at most 4 characters. Then you can either edit the CYN1 catalog procedure to reference that member as the default parameter template, or override the default when you start the CYN1 address space. For example the JES command:

"START CYN1PROC,PARMS=ABCD" specifies that the CYN1 address space will load the member CYNPABCD from the library CYN.SCYNAUTH when coming up and it will use the values specified in that member to allocate its in memory SMF structures.

You can only modify the following lines in that member:

... PEQUSENN EQU 10 # OF SERVER ENTRIES ... PEQUBSNN EQU PEQUSENN*2*10 NUMBER OF BEAN SECTION ENTRIES ... PEQUBMNN EQU PEQUBSNN*10 # OF BEAN METHOD ENTRIES ... PEQUWSNN EQU PEQUSENN*2*10 # OF WEBAPP SECTION ENTRIES ... PEQUSVNN EQU PEQUWSNN*10 # OF SERVLET SECTION ENTRIES ...

Furthermore, only the number '10' can be changed; in the above example, the 10. Do not change the 2. For each server entry there are two sets of pools, a current pool containing the currently accumulated SMF statistics and an in-progress pool containing the latest SMF statistics. The SMF statistics in the two pools are then

aggregated into the currently accumulated SMF statistics. Hence the factor of 2 which is specified in the PEQUBSNN and PEQUWSNN constants, and which should not be changed.

The constant PEQUSENN specifies the maximum number of server instances running in the LPAR for which CYN1 will keep SMF statistics for. Once a server entry is allocated, it remains so until the CYN1 region is brought down. Specify a number big enough to accommodate your needs, but keep in mind that the size of the bean section, bean method, web application, and servlet section pools will be multiplied by that number.

The constant PEQUBSNN specifies the average number of bean section entries per pool and per server instance. Some server instances may have more, some other less. That number is the size of the common pool. Specify the appropriate number here.

The constant PEQUBMNN specifies the average number of bean method entries per bean section. Some beans may have more, some other less. That number is the size of the common pool. Again specify the appropriate number.

The constant PEQUWSNN specifies the average number of web application section entries per pool and per server instance. Some server instances may have more, some other less. That number is the size of the common pool. Specify the appropriate number here.

The constant PEQUSVNN specifies the average number of servlet entries per web application section. Some web applications may have more, some other less. That number is the size of the common pool. Again specify the appropriate number.

Keep in mind that because of the multiplication factors, the number that you specify at the higher levels (server, bean sections, web application sections) are propagated at the lower levels. Be aware of that rather than specifying the biggest numbers just to be safe. The parameter template may not assemble correctly if the size of the SMF structure is too big.

Configuring the parameters dynamically: Another way to specify the size of the parameter values above is to override the PARMS parameter in the start command with those values explicitly. The values are included between two slashes ("/"), separated with spaces or commas, and they must all be present. For example, specifying:

START CYN1PROC,PARMS='/ 10,20,5,7,8/' will cause CYN1PROC to dynamically compute its memory requirements with: Number of server instances: 10 (PEQUSENN) Average number of bean sections per server instance: 20 (PEQUBSNN) Average number of bean methods per bean section: 5 (PEQUBMNN) Average number of web applications per server instance: 7 (PEQUWSNN) Average number of servlets per web application: 8 (PEQUSVNN) All 5 values must be specified. CYN1PROC will not create a parameter member.

For example:
```
START CYN1PROC
```

will start CYN1PROC using the default specification in the PARMS value of the cataloged procedure (either explicit values, or a parameter member, e.g.,CYNPTEST).
```
START CYN1PROC,PARMS='PROD'
```

will start CYN1PROC using the values defined in the parameter member
CYNPPROD.

```
START CYN1PROC,PARMS='/ 10, 30, 30, 10, 10/'
```

will start CYN1PROC using the specified values instead of the values specified in a
parameter member.

Verifying the MVS Components: The following MVS commands may be used to
help ensure the installation was successful.

To verify the definition of the CYN1FU83 exit, use the command:

```
        D PROG,EXIT,MODNAME=CYN1FU83
```

This should produce messages similar to the following:

```
              CSV462I 16.46.00 PROG,EXIT DISPLAY 978
              MODULE  CYN1FU83
              EXIT(S) SYS.IEFU83        SYSSTC.IEFU83
```

To verify the installation of the SYSSTC.IEFU83 exit, use the command:

```
    D PROG,EXIT,EX=SYSSTC.IEFU83,DIAG
```

This should produce messages similar to the following:

```
        CSV464I 10.09.39 PROG,EXIT DISPLAY 136
        EXIT SYSSTC.IEFU83
        MODULE    STATE EPADDR     LOADPT     LENGTH      JOBNAME
        CYN1FU83    A     8A0241A0  0A0241A0  000001E0    *
      (verify the Loadpoint and Length are not zero)
```

To verify the installation of the SYS.IEFU83 exit, use the command:

```
    D PROG,EXIT,EX=SYS.IEFU83,DIAG
```

This should produce messages similar to the following:

```
        CSV464I 10.12.26 PROG,EXIT DISPLAY 291
        EXIT SYS.IEFU83
        MODULE    STATE EPADDR     LOADPT     LENGTH      JOBNAME
        CYN1FU83    A     932FB5C8  132FB5C8  000001E0    *
      (verify the Loadpoint and Length are not zero)
```

To verify that CYN.SCYNAUTH is APF authorized, use the command:

```
    D PROG,APF,DSNAME=CYN.SCYNAUTH
```

This should produce a message similar to the following:

```
        CSV450I 17.04.49 PROG,APF DISPLAY 386
        FORMAT=DYNAMIC
        ENTRY                VOLUME        DSNAME
        1                    STCE03         CYN.SCYNAUTH
```

To verify that CYN.SCYNAUTH is in the active Linklist, use the command:

```
    D PROG,LNKLST
```

This should produce a message similar to the following:

```
        RESPONSE=STLABCE
        CSV470I 14.28.30 LNKLST DISPLAY 539
        LNKLST SET LINK00   LNKAUTH=LNKLST
```

```
ENTRY         APF     VOLUME         DSNAME
   1          A       IPL12B         SYS1.LINKLIB
   2          A       RES20F         CYN.SCYNAUTH
   3          .........
```

To verify that CYN1 Subsystem is defined, use the command:

```
D SSI,SUB=CYN1
```

This should produce a message similar to the following:

```
IEFJ100I  10.32.59  SSI DISPLAY 349
SUBSYS=CYN1
DYNAMIC=YES     STATUS=INACTIVE    COMMANDS=REJECT
```

Verify the system is recording SMF type 120 records and the CYN1 subsystem is capturing data in conjunction with the IEFU83 exits. This test must be done after all previous tests and when the WebSphere changes (see the following section) have been implemented, the conversation activated and WebSphere is up and running. At that point, use the following commands:

```
S CYN1PROC
```

Wait for x minutes to execute the next command where x=SMF interval length. See Chapter 9, "Customization," on page 79.

```
F CYN1PROC,DUMP,AS,$CYNSETB,192
```

This should produce output similar to the following:

```
CYNS0004I: DUMP,AS,$CYNSETB,192
CYNS0013I:    13803000     00000000      00000000 00000000 00000000     |
CYNS0013I:    13803010 00000000      00000000 00000000     00000000     |
CYNS0013I:    13803020     00000000 00000000 00000000     00000000      |
CYNS0013I:    13803030     00000000 00000000     00000000     00000000  |
CYNS0013I:    13803040     00000000      00000000 00000000     00000000 |
CYNS0013I:    13803050     00000000     00000000     00000000    00000000 |
CYNS0013I:    13803060 13803514     00000037     C1C4C3C4     D7D30000   | ADCDPL
CYNS0013I:    13803070 00000000 00000000     00000000 00000000    |
CYNS0013I:    13803080 00000000     00000000     00000000     00000000 |
CYNS0013I:    13803090 00000000 00000000     00000000     00000000   |
CYNS0013I:    138030A0     00000000 00000000     C2C2D6C1 E2D9F200 | BBOASR2
CYNS0013I:    138030B0 C2C2D6C1 E2D9F2C3     13803444     13803478    | BBOASR2C
```

where:

ADCDPL
is your Sysplex

BBOASR2
is your J2EE Server

BBOASR2C
is your J2EE Server Instance

To look for version of the CYN1PROC, use the following command:

```
F CYN1PROC,VER
CYNS0004I: VER
CYNS0045I: CYN1 ID: CYN1DRVR 03.01.00 09/14/04 18.09
```

Copy Data Collector Files for Servers

The following convention is suggested for choosing the usr/lpp for the Data Collector:

- Choose a high level qualifier. For example, mkdir /usr/lpp if it does not exist already.
- The subdirectory "wsam" is fixed, e.g., mkdir /usr/lpp/wsam if it does not exist already.
- It is recommended that the last subdirectory be the server/instance name that is created via the WebSphere Admin console for the Application Monitor. For example, mkdir /usr/lpp/wsam/serverA if it does not exist already.

Note: For Data Collector upgrade, we recommend you archive or remove the old Data Collector files:

To archive the old Data Collector files, for example:

```
mkdir <high level qualifier>/wsam/
  <server>/backup

mv <high level qualifier>/wsam/<server>/lib /<high level qualifier>/wsam/
  <server>/backup

mv <high level qualifier>/wsam/<server>/etc /<high level qualifier>/wsam/
  <server>/backup

mv <high level qualifier>/wsam/<server>/logs /<high level qualifier>/wsam/
  <server>/backup
```

To remove the old Data Collector files, for example:

```
rm -rf <high level qualifier>/wsam/<server>/lib

rm -rf <high level qualifier>/wsam/<server>/etc

rm -rf <high level qualifier>/wsam/<server>/logs
```

- For Data Collector upgrade, remove the old files, for example:

```
rm -rf <high level qualifier>/wsam/<server>/lib

rm -rf <high level qualifier>/wsam/<server>/etc

rm -rf <high level qualifier>/wsam/<server>/logs
```

- Copy from/usr/lpp/tmp to installation directory.

```
cp -R /usr/lpp/tmp/wsam/was_server/* /<high level qualifier>/wsam/
  <server>/
```

Note: In this example, <high level qualifier>/wsam/<server> refers to /usr/lpp/wsam/serverA

Verifying Installation of the Data Collector

After installing the Data Collector on z/OS or OS/390, you should verify that the installed directories and files match those listed in this chapter. usr/lpp and <server> represent whatever directory name that you use.

Verifying WebSphere 5

The following table describes the location and permissions of directories and files included in the installation of Application Monitor Data Collector for WebSphere 5.

Table 5. Installed Directories and Files for WebSphere 5

System	File	Permissions
USS	/usr/lpp/wsam	rwxr-xr-x
USS	/usr/lpp/wsam/<server>	rwxr-xr-x

Table 5. Installed Directories and Files for WebSphere 5 (continued)

System	File	Permissions
USS	/usr/lpp/wsam/<server>/etc /usr/lpp/wsam/<server>/etc/LogMessages /usr/lpp/wsam/<server>/etc/jndi.properties /usr/lpp/wsam/<server>/etc/datacollector.properties /usr/lpp/wsam/<server>/etc/datacollector.env /usr/lpp/wsam/<server>/etc/datacollectorservice.xml /usr/lpp/wsam/<server>/etc/request_jdbc.xml /usr/lpp/wsam/<server>/etc/request_ctg.xml /usr/lpp/wsam/<server>/etc/request_imsconnect.xml /usr/lpp/wsam/<server>/etc/request_jmsqueue.xml /usr/lpp/wsam/<server>/etc/request_jmstopic.xml /usr/lpp/wsam/<server>/etc/request_mqi.xml /usr/lpp/wsam/<server>/etc/bcm.properties /usr/lpp/wsam/<server>/etc/version.properties	rwxr-xr-x
USS	For z/OS WebSphere 5.0.2 /usr/lpp/wsam/<server>/lib /usr/lpp/wsam/<server>/lib/libam.so /usr/lpp/wsam/<server>/lib/common.jar /usr/lpp/wsam/<server>/lib/cdn.jar /usr/lpp/wsam/<server>/lib/cyaneaaux.jar /usr/lpp/wsam/<server>/lib/kernel.common.jar /usr/lpp/wsam/<server>/lib/model.jar /usr/lpp/wsam/<server>/lib/ppe.probe-intf.jar /usr/lpp/wsam/<server>/lib/ppe.zprobe.jar /usr/lpp/wsam/<server>/lib/ppe.zws502.jar /usr/lpp/wsam/<server>/lib/ppe.zcdn_impl.jar / usr/lpp/wsam/<server>/lib/ext/	rwxr-xr-x
USS	For z/OS WebSphere 5.1 /usr/lpp/wsam/<server>/lib /usr/lpp/wsam/<server>/lib/libam.so /usr/lpp/wsam/<server>/lib/libamDLL.so /usr/lpp/wsam/<server>/lib/common.jar /usr/lpp/wsam/<server>/lib/cdn.jar /usr/lpp/wsam/<server>/lib/cyaneaaux.jar /usr/lpp/wsam/<server>/lib/kernel.common.jar /usr/lpp/wsam/<server>/lib/model.jar /usr/lpp/wsam/<server>/lib/ppe.probe-intf.jar /usr/lpp/wsam/<server>/lib/ppe.zprobe.jar /usr/lpp/wsam/<server>/lib/ppe.zws510.jar /usr/lpp/wsam/<server>/lib/ppe.zcdn_impl.jar / usr/lpp/wsam/<server>/lib/ext/	rwxr-xr-x
USS	/usr/lpp/wsam/<server>/logs	rwxr-xr-x

Table 5. Installed Directories and Files for WebSphere 5 (continued)

System	File	Permissions
MVS	CYN.SCYNAUTH(CYN1$WTO) CYN.SCYNAUTH(CYN1CALL) CYN.SCYNAUTH(CYN1DRVR) CYN.SCYNAUTH(CYN1DUMP) CYN.SCYNAUTH(CYN1FU83) CYN.SCYNAUTH(CYN1KCRR) CYN.SCYNAUTH(CYN1KCR8) CYN.SCYNAUTH(CYN1KFOP) CYN.SCYNAUTH(CYN1KGBM) CYN.SCYNAUTH(CYN1KGBS) CYN.SCYNAUTH(CYN1KGHS) CYN.SCYNAUTH(CYN1KGSS) CYN.SCYNAUTH(CYN1KGSV) CYN.SCYNAUTH(CYN1KGWS) CYN.SCYNAUTH(CYN1KRSS) CYN.SCYNAUTH(CYN1KWEN) CYN.SCYNAUTH(CYN1KWSC) CYN.SCYNAUTH(CYN1KWSP) CYN.SCYNAUTH(CYN1MSGS) CYN.SCYNAUTH(CYN1OPER) CYN.SCYNAUTH(CYN1SLOG) CYN.SCYNAUTH(CYN1TIME) CYN.SCYNAUTH(CYN1UTIL) CYN.SCYNAUTH(CYN1WLM) CYN.SCYNAUTH(CYN1XCOM) CYN.SCYNAUTH(CYN1XINT) CYN.SCYNAUTH(CYN1XMPC) CYN.SCYNAUTH(CYN1XOP) CYN.SCYNAUTH(CYN1XTRM) CYN.SCYNAUTH(CYN1XZAP) CYN.SCYNAUTH(CYNMENGL) CYN.SCYNAUTH(CYNMFRCH) CYN.SCYNAUTH(CYNPTEST) CYN.SCYNAUTH(CYNPBIG) CYN.SCYNAUTH(CYNPRAIF)	AC=00 AC=00 AC=01 AC=00 AC=01 AC=00 AC=00 AC=00 AC=00 AC=00 AC=00 AC=00 AC=00
MVS	CYN.SCYNPROC(CYN1ELOG) CYN.SCYNPROC(CYN1PROC)	AC=00 AC=00

Configuring the Data Collector

The Data Collector must point to the Managing Server and the WebSphere Control Region. This is done by setting parameters that identify the IP address of the Managing Server and the WebSphere Control Region. These changes must be implemented prior to starting the Data Collector.

From here on, we refer to the usr/lpp as the high level qualifier of your Data Collector directory path.<server> as the last subdirectory of your Data Collector directory path (i.e., this may be your server/instance name). <WebSphere directory> as your z/OS WebSphere directory path.

General

The following are general instructions for configuring the Data Collector.

To configure the Data Collector:

Once you have installed a Data Collector, you must configure it so that it communicates with the Managing Server. This is accomplished by setting the properties in the following two files:

- /usr/lpp/wsam/<server>/etc/datacollector.properties
- /usr/lpp/wsam/<server>/etc/datacollector.env

1. Edit the file /usr/lpp/wsam/<server>/etc/datacollector.properties. For property references, see "Data Collector Property References" on page 72.

   - Change all occurrences in this file (global change) of the default IP Address in kernel.codebase and kernel.rfs.address properties for example, 9.30.134.134 to the IP Address of your Managing Server.
   - Save your changes and close the file.

2. Edit the file: /usr/lpp/etc/datacollector.env. For property references, see "Data Collector Property References" on page 72.
   - Change the default directory path in am_modfile property:

From	To
/usr/lpp/wsam/was_server	/usr/lpp/wsam/<server>/

   - Save your changes and close the file.

Once you have installed, configured, and brought up the Data Collector, the following system-generated files are created and used for subsequent startups in /usr/lpp/wsam/<server>/etc:

- <sysplex>.<machine name>.<LPAR name>.<server instance name>. datacollector.properties
- <sysplex>.<machine name>.<LPAR name>.<server instance name>.id
- <sysplex>.<machine name>.<LPAR name>.<server instance name>.gpsCounter.txt
- am.mod

Therefore, if you need to change a value defined in datacollector.properties (such as Managing Server IP address), you must delete these system-generated datacollector.properties files, as described in the following instructions:

To update the datacollector.properties file:

1. Update the datacollector.properties file with your changes.
2. Remove the following system-generated files which are located in the usr/lpp/wsam/<server>/etc directory:

   ```
   <sysplex>.<machine name>.<LPAR name>.<server instance name>
     .datacollector.properties
   ```

   ```
   <sysplex>.<machine name>.<LPAR name>.<server
   instance name>.gpsCounter.txt
   ```

3. Restart the server.

Configuring the Application Servers

The following instructions describe how to install the Application Servers on WebSphere 5 on z/OS.

Configuring WebSphere 5 on z/OS

Configuring WebSphere 5 on z/OS involves the following tasks:

- "Configuring Probe Services" on page 65.
- "Configuring the z/OS Data Collector Home Runtime" on page 66.
- "Configuring Protocol Timeout Properties" on page 67
- "Configuring Administrative Services" on page 68.
- "Configuring the Servant Region Libpath" on page 68.
- "Supporting Global and Java Security" on page 69.

Updating WebSphere Proclib
The WebSphere Servant Region proclib must be updated to accommodate the Application Monitor Heap Analysis function. Else, the Heap Analysis function may cause WebSphere to abend. Update the Servant Region procedure to include

HEAP(,,,FREE). For Data Collector upgrade, simply comply with the following configuration. The updated version of the proclib looks like the following:

```
    //BB05ASR PROC ENV = ADCDPL.P390.SERVER1,Z=BB05ASRZ
//  SET ROOT='/WebSphere/V5ROM1'
//BBOSR  EXEC PGM=BBOSR,REGION=0M,TIME=NOLIMIT,
//PARM='TRAP(ON,NOSPIE),HEAP(,,,FREE),ENVAR("_EDC_UMASK_DFLT=007")/"
//BBOENV DD PATH='&ROOT/&ENV/    was.env'
// INCLUDE MEMBER=&Z
```

Configuring Probe Services

You must configure probe services in WebSphere in order to use the Application Monitor. This defines the Data Collector custom services to run within the server.

1. Login to the WebSphere Administration Console.
2. Navigate as follows:
   a. Select the Servers > Application Servers option and select the <ServerName>.
   b. Navigate to the Additional Properties: Custom Services.
3. Select <New> for new creation or select '-' of the probe service for update.
4. In the configuration window enter or update the following (For Data Collector upgrade, delete the contents of the classpath and re-enter the new configuration.):

   Startup: checked

   External Configuration URL: <blank>

   Classname: com.cyanea.websphere.ProbeService

   Display Name: Probe Service

   Description: <blank>

   Classpath:

   /usr/lpp/wsam/<server>/lib/ppe.zprobe.jar:

   /usr/lpp/wsam/<server>/lib/ppe.zws502.jar:1

   /usr/lpp/wsam/<server>/lib/ppe.probe-intf.jar:

   /usr/lpp/wsam/<server>/lib/model.jar:

   /usr/lpp/wsam/<server>/lib/kernel.common.jar:

   /usr/lpp/wsam/<server>/lib/common.jar:

   /usr/lpp/wsam/<server>/lib/cyaneaaux.jar:

   /usr/lpp/wsam/<server>/lib/ppe.zcdn_impl.jar:

   /usr/lpp/wsam/<server>/lib/cdn.jar

   1 For z/OS WebSphere 5.1, use ppe.zws510.jar instead of ppe.zws502.jar.
5. Select <Apply>.
6. In the Messages dialog box, select 'Save'.
7. In the Save to Master Configuration dialog box,
   • If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
   • If you are NOT under ND environment, simply select <Save>.
8. You may re-verify your configuration data in <WebSphere directory>/<server>/server.xml by searching the keyword 'Probe Service'.

   Note: This file is ASCII encoded. To view it, you need to either use an editor which support ASCII encoding (e.g. viascii) or export it to a computer (UNIX or Windows) which supports the ASCII character set by default.

Configuring the z/OS Data Collector Home Runtime

You must configure Home Runtime in WebSphere in order to use the Application Monitor. This defines the Application Monitor start command.

1. Login to the WebSphere Administration Console.
2. Select the Server > Application Servers option and select the <ServerName>.
3. Navigate to the Additional Properties: Process Definition > Servant > Additional Properties: Java Virtual Machine.
4. Add <installation_directory>/wsam/<server>/lib/boot/bcm-bootstrap.jar to the Boot Classpath property.
5. In the Generic JVM arguments field:
   a. Add the command: -Xrunam.
   b. Add the command: -Xbootclasspath/p:/<installation_directory>/lib/boot/bcm-bootstrap.jar.
   c. (Optional) Append the following parameters to support the Garbage Collector Interval.

      ```
      -Dsun.rmi.dgc.client.gcInterval=3600000 -Dsun.rmi.dgc.server.gcInterval
        =3600000
      ```

      Note: The Data Collector communicates with the Managing Server using TCPIP sockets and RMI. One effect of using RMI is that garbage collection occurs every minute. If you don't want this to happen, you can specify the garbage collection interval explicitly to a preferred interval by specifying the parameters in the Generic JVM arguments field. These parameters must be implemented as a pair.
6. Change Initial Heap Size to 256 and Maximum Heap Size to 256 or above.
7. Select 'Apply'.
8. Navigate as follows:
   a. In the Java Virtual Machine Panel, navigate to the Additional Properties: Custom Properties.
   b. For new Data Collector installation:
      1) Select <New>.
      2) In the configuration panel, enter the following name/value pair. Select <OK> after each add operation:

Name	Value
am.home	/usr/lpp/wsam/<server>
appserver.platform3	ws502
java.rmi.server.codebase[4]	For UNIX: 'file:///opt/ibm/wsam/lib3.2/ppe.zprobe.jar file:///opt/ibm/wsam/lib/ppe.probe-intf.jar file:///opt/ibm/wsam/lib3.2/ppe.zws502.jar'2 For Windows: file:/C:\Progra~1\IBM\wsam\lib3.2\ppe.zprobe.jar file:/C:\Progra~1\IBM\wsam\lib\ppe.probe-intf.jar file:/C:\Progra~1\IBM\wsam\lib3.2\ppe.zws502.jar'2 **Note:** Where /opt/ibm/wsam and C:\Progra~1\IBM\wsam is your Managing Server installation directory.
com.ibm.websphere. classloader.plugin	com.cyanea.bcm.websphere.BcmPlugin

   c. For Data Collector upgrade:

1) Update am.home property to reference the current Application Monitor Data Collector server path. Delete the cyanea.home and create one called am.home.

2) Select <New> to create the new properties if they don't already exist.

3) In the configuration panel, enter the following name/value pair. Select <OK> after each add operation:

Name	Value
appserver.platform3	ws502
java.rmi.server.codebase[4]	For UNIX: 'file:///<msinstallation_directory>/lib3.2/ppe.zprobe.jar file:///<msinstallation_directory>/lib/ppe.probe-intf.jar file:///<msinstallation_directory>/lib3.2/ppe.zws502.jar'2 For Windows: file:/C:\\Progra~1\\IBM\wsam\lib3.2\\ppe.zprobe.jar file:/C:\\Progra~1\\IBM\\wsam\\lib\\ppe.probe-intf.jar file:/C:\\Progra~1\\IBM\\wsam\\lib3.2\\ppe.zws502.jar'2
com.ibm.websphere. classloader.plugin	com.cyanea.bcm.websphere.BcmPlugin

1 <libversion> is the Application Monitor version information, for example, lib3.2 refers to lib directory of the Application Monitor 3.2.

2 For z/OS WebSphere 5.1, use ppe.zws510.jar instead of ppe.zws502.jar.

3 For z/OS WebSphere 5.1, enter value as 'ws51'.

[4]Two single quotes are used to wrap the entire string. There is a space between every two 'file' URLs. Since there are 3 file URLs in the string, there are 2 spaces inside the single-quoted strings. If this string has incorrect syntax, the JVM will not be attached by WebSphere correctly and will result in a CEE DUMP.

9. In the Messages dialog box, select 'Save'.

10. In the Save to Master Configuration dialog box,
    - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
    - If you are NOT under ND environment, simply select <Save>.

11. You may re-verify your configuration data in <WebSphere directory>/<server>/servant.jvm.options by searching the property name (e.g., runam, am.home).

Configuring Protocol Timeout Properties

If you have a transaction that is hung or too slow, you need to do this to avoid an abend. This option is required only for new Data Collector installations.

1. Login to the WebSphere Administration Console.

2. Navigate as follows:
   a. Select the Server > Application Servers option and select the <ServerName>.
   b. Navigate to the Additional Properties: Process Definition > Control > Additional Properties: Environment Entries.
   c. Add the following properties, as name/value pairs. Select <OK> after each add operation:

Name	Suggested Minimum Value
protocol_http_timeout_input	3600

protocol_http_timeout_output	3600
protocol_http_timeout_output_recovery	3600
protocol_http_timeout_persistentSession	3600

3. In the Messages dialog box, select 'Save'.

4. In the Save to Master Configuration dialog box,

   - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.

   - If you are NOT under ND environment, simply select <Save>.

5. You may re-verify your configuration data in <WebSphere directory>/<server>/was.env.

Configuring Administrative Services

If your WebSphere Configuration Services is not enabled, you must configure administrative services in WebSphere in order to use the Application Monitor Data Collector.

1. Login to the WebSphere Administration Console.

2. Navigate as follows:

   a. Select the Server > Application Servers option and select the <ServerName>.

   b. Navigate to the Additional Properties: Administration Services

   c. Select 'Custom Properties'.

3. Make sure the following property is set to "true", or create it if it does not yet exist:

Name	Value
com.ibm.websphere.management.enableConfigMBean	true

4. Select 'Apply'.

5. In the Messages dialog box, select 'Save'.

6. In the Save to Master Configuration dialog box,

   - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.

   - If you are NOT under ND environment, simply select <Save>.

Configuring the Servant Region Libpath

You must configure the servant region libpath in order to run the Application Monitor Data Collector. This adds the Data Collector libpath information to the LIBPATH property of WebSphere Servant Environment so that the Data Collector native library can be invoked at the server startup time.

1. Login to the WebSphere Administration Console.

2. Navigate as follows:

   a. Select the Servers > Application Servers option, select the <ServerName>.

   b. Navigate to Additional Properties: Process Definition > Servant > Additional Properties: Environment Entries.

   c. Select New button for creating new entry LIBPATH or select the LIBPATH entry for an update.

   d. Insert the following properties as name/value pair to the beginning (for Data Collector upgrade update the following LIBPATH value just to be compliant):

Name	Value
LIBPATH	usr/lpp/wsam/<server>/lib

   e. Select <Apply>.

      Note: A colon ':' must be used to separate two property values.

3. In the Messages dialog box, select 'Save'.

4. In the Save to Master Configuration dialog box,

   • If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.

   • If you are NOT under ND environment, simply select <Save>.

5. You may confirm your changes in was.env and server.xml under <WebSphere directory>/servers/<ServerName> directory via key word 'server_region_libpath' and 'LIBPATH', respectively.

   Note: The server.xml is ASCII encoded. To view it, you need to either use an editor which support ASCII encoding (e.g. viascii) or export it to a computer (UNIX or Windows) which supports the ASCII character set by default.

6. If you are upgrading z/OS Data Collector from release 2.1.4 or earlier, you may already have an existing server with the old configuration. If so, we recommend removing the old configuration.

   a. Go to the mainframe USS window.

   b. Go to the WebSphere Server directory. For example, /WebSphere/.../servers/<ServerName>.

   c. Open the file "variables.xml" and remove the following values under variable 'WAS_SERVER_ONLY_server_region_libpath' if they exist:

      /usr/lpp/wsam/<server>/lib

      /usr/lpp/cicsts/gateway/ctg/deployable

   d. If you are under ND (Network Deployment) environment, go to the <WebSphere Deployment Manager Directory>/.../servers/<ServerName>. For example,

```
cd /WebSphere/V5R1M0/DeploymentManager/config/cells/ADCDPLNetwork/
nodes/nodeA/servers/server1
```

   e. Perform the same operation as step 3 above (delete the 'WAS_SERVER_ONLY_server_region_libpath' property from 'variable.xml').

Supporting Global and Java Security

• Whether Global security is enabled or not, no change is required by the Application Monitor Data Collector in <WebSphere>/AppServer/properties/server.policy.

• If Java 2 security is enabled, the following properties are required by the Application Monitor Data Collector to be added to <WebSphere>/AppServer/properties/server.policy.

```
// Added the following for the Application Monitor Data Collector
grant codeBase "file:/usr/lpp/wsam/-" {permission
java.security.AllPermission;
};grant codeBase "file:/<db2 install path>/db2710/classes/
-" {permission java.security.AllPermission;};
```

For example, add the following for the Application Monitor Data Collector grant codeBase "file:/usr/lpp/wsam/-" {
permission java.security.AllPermission; };

```
        grant codeBase "file:/usr/lpp/db2/db2710/classes/-" { permission
        java.security.AllPermission; };
```

- If Java 2 security is disabled, the following properties, if they exist, can be removed from the <WebSphere>/AppServer/properties/server.policy.

```
grant codeBase "file:/usr/lpp/wsam/-" {
 permission java.security.AllPermission;
};
grant codeBase "file:/<db2 install path>/db2710/classes/-" {
permission java.security.AllPermission;
};
```

Note: Although the install is complete, you need to continue with customization in Chapter 9.

Starting the Data Collector (Quick Start Guide)

Here is a quick start guide for the Data Collector. We recommend you review the Custom options in Chapter 9, "Customization," on page 79 and continue the Data Collector installation process if the options apply to you. In addition, it is strongly recommended that you read the Operator's Guide and the User's Guide for more detailed information on using this product.

Note: Suggest verifying the Application Server without the Application Monitor configuration is functional before continuing the following instructions.

Start the Managing Server (see "Starting the Application Monitor (UNIX-only)" on page 32 in Chapter 5, "Troubleshooting," on page 41.)

1. Start the CYN1PROC procedure.
2. Start WebSphere with the Application Monitor Data Collector configuration.
3. Using TSO and SDSF (or another suitable program),
   - Check the WebSphere JESMSGLG job log for the configured Server Region. You are looking for the "open for e-business" message that indicates the Server Instance has completed initialization.
   - Check the WebSphere SYSPRINT job log for the configured Server Region. You are looking for the following messages:

```
CYNK0001I <PPECONTROLLER,  ...  Successfully joined Kernel
  <IP-of-managing-server>
CYNK0002I <PPEPROBE,  ...  Successfully joined Kernel <IP-of-managing-server>
+Server "<your-server-name>" open for business
```

The CYNK0001I message indicates the Data Collector has successfully connected to the Managing Server.

The CYNK0002I message indicates the Data Collector has been configured by the Managing Server.

Configuring Distinct WebSphere Application Server Instances

You may have multiple distinct server instances under a common Control Region. In this case, you may want to monitor all server instances concurrently. To monitor two or more distinct WebSphere instances, you will need to create an additional USS directory structure for each WebSphere instance.

General

The following are general instructions for configuring a distinct WebSphere Application Server instance.

Setting up the Data Collector Directories

Duplicate the /usr/lpp/wsam/<server> structure for each additional distinct server instance. Follow and repeat the instructions below increasing the directory name structure for each duplicate (i.e. create <server2> for the second distinct server instance, <server3> for the third and so on).

Log onto the z/OS uss environment, create a copy of the /usr/lpp/wsam/<server> directory structure and files with the following commands:

```
cd  /usr/lpp/
mkdir wsam/<server2>
```

To use share library files approach:

- Duplicate the Application Monitor Data Collector configuration file structures (e.g., <etc directory>).

  cp –pR /usr/lpp/wsam/<server>/etc /usr/lpp/wsam/<server2>
- Make <logs> directory for <server2>.

  mkdir /usr/lpp/wsam/<server2>/logs
- Make a <shared> directory for other Application server instances to share the same version of libraries.

  mkdir /usr/lpp/wsam/shared
- Copy the Data Collector libraries from the 1st server instance library directory to the <shared> directory.

  cp -R/usr/lpp/wsam/<server>/lib/* /usr/lpp/wsam/shared
- Change the file permission for the <shared> directory and files beneath it.

  chmod -R 755 /usr/lpp/wsam/shared
- Reference the other server instance <lib> directory to the <shared> directory

  cd /usr/lpp/wsam/<server2>/

  ln -s /usr/lpp/wsam/shared lib

Note: This approach can be used if the distinct Application Server instances are of the same version. For example, you can not use this shared libraries approach for different versions (2.1.4, 3.1 and 3.2) of the Application Monitor Data Collector .

To use the copied library files approach:

- Simply copy ALL the Application Monitor Data Collector files structures.

```
cp –pR /usr/lpp/wsam/<server>/* /usr/lpp
   /wsam/<server2>
```

- Remove the log files that were created by the originating server instance.

  rm /usr/lpp/wsam/<server2>/logs/*
- Change files/directories permission.

```
cd /usr/lpp/wsam/<server2>
chmod –R 777 etc
chmod –R 777 logs
chmod –R 755 lib
```

z/OS WebSphere 5

Update Data Collector Control Files

You will need to update the files containing specific pointers to the /usr/lpp/wsam/<server> directory and any of its subdirectories.

Edit the following file and replace all occurrences of the "old string" with the "new string".

FILE	OLD STRING	NEW STRING
/usr/lpp/wsam/<server2>/etc/datacollector.env	<server>	<server2>

Follow and repeat the instructions, increase the directory name structure created in the step above (i.e. update <server2> for the second server instance, <server3> for the third and so on).

Cloning a WebSphere Server with the Application Monitor Data Collector Configuration

The cloning mechanism is a quick way to create another WebSphere Server. If the WebSphere Server that was cloned from consists of the Application Monitor Data Collector configuration, all of the Data Collector configurations will be propagated to the new cloned WebSphere Server. However, you need to tailor the new server to be in compliance with your own Application Monitor Data Collector configuration in order to work well (e.g., the classpath, libpath, jdbc provider, etc.).

Note: Recommend to review and perform (only if you choose to) the optional support configuration on the Application Monitor server before cloning it. This will allow the optional support configuration to be cloned as well. See Chapter 9, "Customization," on page 79.

To clone a server in WebSphere 5:

1. Login to the WebSphere Administration Console.
2. Navigate to the Server > Application Servers option and select the server 'New':
3. Enter the server name.
4. In "select template," select the "Existing Application Server" button and the server you want to clone.
5. Click 'Next'.
6. Click 'Finish'.

Follow the instructions from the following references to replace <server> with <server2>:
- "Configuring Probe Services" on page 65.
- "Configuring the z/OS Data Collector Home Runtime" on page 66.
- "Configuring the Servant Region Libpath" on page 68.
- Chapter 9, "Customization," on page 79.

Data Collector Property References

z/OS WebSphere 5

The following examples show the default datacollector.properties and datacollector.env file settings.

datacollector.properties (for z/OS WebSphere 5)

DEFAULT datacollector.properties
kernel.codebase[1]=http://9.30.134.134:9122/kernel.core.jar http://9.30.134.134:9123/kernel.core.jar http://9.30.134.134:9122/ppe.publish.jar http://9.30.134.134:9123/ppe.publish.jar http://9.30.134.134.:9122/ppe.publish-intf.jar http://9.30.134.134:9123/ppe.publish-intf.jar kernel.rfs.address[1]=9.30.134.134:9120 9.30.134.134:9121 probe.rmi.port=8200-8299 probe.controller.rmi.port=8300-8399 am.usecustomrmi=true am.rmisocket.timeout=360000 appmonitor.url.limit=1000 appmonitor.sql.limit=5000

[1]The property value should be entered as one continuous line in the datacollector.properties file.

appmonitor.sql.limit

> This property specifies the maximum length for the SQL strings. The default value is 5000 characters. If the SQL strings exceed this defined length, the data collector will truncate it and thus only the SQL string up to the defined length will be displayed in the Managing Server VE.
>
> **Value**
>
> Length, in integer.
>
> **Example**
>
> ```
> appmonitor.sql.limit=5000
> ```

appmonitor.url.limit

> This property specifies the maximum length for the URL strings. The URL strings may consist of requestName, applicationName, and URL. The default value is 1000 characters. If the URL strings exceed this defined length, the data collector will truncate it and thus only the URL string up to the defined length will be displayed in the Managing Server VE.
>
> **Value**
>
> Length, in integer.
>
> **Example**
>
> ```
> appmonitor.url.limit=1000
> ```

am.installedapps.dir

> For a Network Deployment environment, this property is optional and is used by the Software Consistency Check function. This allows you to specify additional application directories for comparison purpose should they do not reside in the directories of standard cell/naming convention.
>
> **Value**
>
> Sub-strings of directoryy names where application code resides.
>
> **Example**
>
> ```
> am.installedapps.dir=/WebSphere/V5R0M1/AppServer/installedApps/cellA:
> /WebSphere/V5R0M1/AppServer/installedApps/cellB:/WebSphere
> /V5R0M1/AppServer/installedApps/cellC
> ```

am.jmx.host

To be used when localhost is not resolved correctly in a non-ND environment. In order for the Application Monitor data collector to work, localhost should be resolved to the host name of the TCP/IP stack that WebSphere binds to.

Note: When this property is needed, recommend to specify as an IP address to eliminate further resolution.
Value

IP Address

Example
```
am.jmx.host=9.30.134.134
```

am.rmisocket.timeout

If the am.usecustomrmi property is set to true, this property specifies the duration of the timeout used for rmi calls.

Value

A duration, in milliseconds.

Example
```
am.rmisocket.timeout=360000
```

am.usecustomrmi

Enables use of custom RMI socket factories that enforce timeout, which prevents hanging the Kernel. Set to false to use standard RMI.

Value

true or false

Example
```
am.usecustomrmi=true
```

gpsCushion

Specifies how frequently the counter, which is used to create unique tokens used to correlate Composite Requests, is written to a file. The default value is 200. Increase this value if there is too much I/O as a result of monitoring systems that process many Composite Requests.

Value

an integer

Example
```
gpsCushion=200
```

java.rmi.server.codebase

This parameter provides the locations of Data Collector code/library which can be downloaded from the Kernel.

Note: The java.rmi.server.codebase property is optional in datacollector.properties, if it has already been defined in the Process Definition of the Servant process. However, if it has not been able to define this property in the Process Definition of the Servant process for whatever reason, you *MUST* specify this property in the datacollector.properties.

Value

z/OS WebSphere 5.0.2:

```
file:///opt/ibm/wsam/<libversion>1/ppe.zprobe.jar
file:///opt/ibm/wsam/<libversion>1/ppe.probe-intf.jar
file:///opt/ibm/wsam/<libversion>1/ppe.zws502.jar
```

z/OS WebSphere 5.1:

```
file:///opt/ibm/wsam/<libversion>1/ppe.zprobe.jar
file:///opt/ibm/wsam/<libversion>1/ppe.probe-intf.jar
file:///opt/ibm/wsam/<libversion>1/ppe.zws510.jar
```

1<libversion> is the Application Monitor version information, for example, lib3.2 refers to libs of the Application Monitor 3.2.

Example

z/OS WebSphere 5.0.2:

```
java.rmi.server.codebase=file:///opt/ibm/wsam/lib3.2/ppe.zprobe.jar
file:///opt/ibm/wsam/lib/ppe.probe-intf.jar
file:///opt/ibm/wsam/lib3.2/ppe.zws502.jar
```

z/OS WebSphere 5.1:

```
java.rmi.server.codebase=file:///opt/ibm/wsam/lib3.2/ppe.zprobe.jar
    file:///opt/ibm/wsam/lib/ppe.probe-intf.jar
file:///opt/ibm/wsam/lib3.2/ppe.zws510.jar
```

kernel.codebase

This parameter provides the locations of the code/library which can be downloaded from the Kernel of the Application Monitor.

Value

There are always two copies of the Kernel running. The hostname (or IP address) of the Kernel and the port number of its HTTP server must be provided. The two values are separated by a space.

```
http://hostname:port number/kernel.core.jar
http://hostname:port number/kernel.core.jar
```

Example

Assuming both copies of the Kernel run on the same IP:

```
kernel.codebase=http://204.146.177.123:9122/kernel.core.jar
http://204.146.177.123:9123/kernel.core.jar
```

kernel.rfs.address

This parameter provides the locations where the stub code can be downloaded from the Kernel of the Application Monitor.

Value

There are always two copies of the Kernel running. The hostname (or IP address) of the Kernel and the port number of its RFS (Request for Stub) server must be provided. The two values are separated by a space.

```
hostname:port number hostname:port number
```

Example

Assuming both copies of the Kernel run on the same IP:

```
kernel.rfs.address=204.146.177.123:9120 204.146.177.123:9121
```

probe.controller.rmi.port

> This parameter specifies a range of port numbers available for the controller of the data collector to communicate to the Visualization Engine. The range should be at least equal to the number of possible server regions that can be started on a single z/OS or OS/390 image and preferably not overlap with that of probe.rmi.port.
>
> **Value**
>
> `nnnn-nnnn`
>
> **Example**
>
> `probe.controller.rmi.port=8300-8399`

probe.rmi.port

> This parameter specifies a range of port numbers available for the Command Agent of the Data Collector to communicate with the Visualization Engine of the Application Monitor. The range should be at least equal to the number of possible server regions that can be started on a single z/OS or OS/390 image.
>
> **Value**
>
> `nnnn-nnnn`
>
> **Example**
>
> `probe.rmi.port=8200-8299`

probe.send.thread.dump

> The value 'yes' means that Thread Dumps are sent back to the Application Monitor when one is requested. The default value is 'yes.'
>
> The value 'no' means that the dump is stored locally, and instead of sending the dump contents, the Data Collector sends the fully-qualified path of the file where the dump is stored.
>
> **Value**
>
> yes or no.
>
> **Example**
>
> `probe.send.thread.dump=yes`

datacollector.env

DEFAULT datacollector.env
am_modfile=/usr/lpp/wsam/was_server/etc/am.mod wsam_intent_trace=yes classes_not_to_trace[1]=java/*;javax/*;sun/*;oracle/*;org/apache /*;org/omg/*;org/w3c/*;org/xml/*;com/ibm/*;com/cyanea/*;com/sun/*;COM/rsa /*;utils/version/*;com/adobe/* classes_to_trace[1]=

[1]The property value above should be entered as one continuous line in the datacollector.properties file.

am_modfile

> This parameter points to a file that contains information on the monitoring level of the Application Monitor.
>
> **Value**

```
usr/lpp/wsam/<server>/etc/am.mod
```

Example

```
am_modfile=/usr/lpp/wsam/serverA/etc/am.mod
```

classes_not_to_trace

This environment variable specifies a list of classes which are not to be method traced. The environment variable only applies:

- if wsam_intent_trace=yes, method tracing will take place at level 3 regardless of the initial monitoring level.
- if wsam_intent_trace=no, method tracing will take place only if the initial monitoring level is 3.

Note: classes_not_to_trace is not related to the "Exclude(classname)" in the Data Collector configuration in the Visualization Engine.
Value

A class list consists of class specifiers and uses ";" as separators between the class specifiers. A class specifier consists of the package name plus its class name and allows use of * as wildcard to describe matching packages or classes.

Example

```
classes_not_to_trace=java/*;javax/*;sun/*;oracle/*;org/apache/*;org/
omg/*;org/w3c/*;org/xml/*;com/cyanea/*;com/sun/*;COM/rsa/*;com/ibm/*;
utils/version/*;com/adobe/*
```

classes_to_trace

This parameter specifies an additional list of classes to be method traced. These classes are in addition to those in the user's application set. This variable only applies:

- if wsam_intent_trace=yes, method tracing will take place at level 3 regardless of the initial monitoring level.
- if wsam_intent_trace=no, method tracing will take place only if the initial monitoring level is 3.

Note: classes_to_trace is not related to the "Exclude Overwrite(classname)" in the Data Collector configuration of Managing Server Visualization Engine.
Value

A class list consists of class specifiers and uses ";" as separators between the class specifiers. A class specifier consists of the package name plus its class name and allows use of * as wildcard to describe matching packages or classes.

Example

```
classes_to_trace=trade/*;simplejspservlet/*
```

wsam_intent_trace

This parameter when set to yes will facilitate dynamic changing of the monitoring level from level 1 to level 3. See more information on this parameter and its impact in the WebSphere Studio Application Monitoring User's Guide. The default value is yes.

Value

<yes> or <no>

Example

wsam_intent_trace=yes

Chapter 9. Customization

Optional z/OS WebSphere 5 Support

Optional support includes capturing and reporting data such as, PMI, J2EE APIs (JDBC, JNDI/JMS, MQI), CICS L2 Trace and SMF. If you are not sure whether you need to configure these options, consult with your WebSphere Admin and/or the Application Support person who knows about the applications that will be used with the Application Monitor product.

PMI = Performance Monitoring Services

JDBC = Java Database Connectivity

JNDI = Java and Naming Directory Interface

JMS = Java Message Service

Adding SMF Support

You must add SMF support if you want SMF data in the Application Monitor. This step is required for new Data Collector installations or for first time using SMF feature from a Data Collector upgrade.

1. Login to the WebSphere Administration Console.
2. Navigate as follows:
   a. Select the Server > Application Servers option and select the <ServerName>.
   b. Navigate to the Additional Properties: Process Definition > Control > Additional Properties: Environment Entries.
   c. Add the following properties, as name/value pairs. Select <OK> after each add operation:

Name	Suggested Value
server_SMF_container_interval_enabled	1
server_SMF_interval_length1	120
server_SMF_server_interval_enabled	1
server_SMF_web_container_interval_enabled	1

3. In the Messages dialog box, select 'Save'.
4. In the Save to Master Configuration dialog box,
   - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
   - If you are NOT under ND environment, simply select <Save>.
5. You may re-verify your configuration data in /<WebSphere directory>/<server>/was.env.

1 The server_SMF_interval_length property is the time interval length (in seconds) for getting SMF data. For example, if value=120, SMF data will be retrieved every 120 seconds.

Adding PMI Support

1. Login to the WebSphere Administration Console.
2. Select the Server > Application Servers option and select the <ServerName>.
3. Navigate to the Additional Properties: Performance Monitoring Service.
4. For the new installation:
   a. Select the options 'startup'.
   b. To fully utilize the Application Monitor features, we recommend the 'custom' options.
   c. Select the 'custom' checkbox with the following configuration:
      - beanModule=X
      - cacheModule=H
      - connectionPoolModule=X
      - j2cModule=H
      - jvmRuntimeModule=H
      - orbPerfModule=H
      - servletSessionsModule=H
      - systemModule=H
      - threadPoolModule=H
      - transactionModule=H
      - webAppModule=H
      - webServicesModule=H
      - wlmModule=H
      - wsgwModule=H
   d. Select 'Apply'.
   e. In the messages Dialog box, select 'Save'.
   f. In the Save to Master Configuration dialog box,
      - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
      - If you are NOT under ND environment, simply select <Save>.
5. For Data Collector upgrade, simply verify:
   a. The 'startup' checkbox is checked.
   b. All PMI modules are compliant with what are listed under new installation section.

Adding JDBC Support

You must configure WSAM JDBC provider in WebSphere in order to monitor SQL and EJB/Entity Bean with DB2 requests. This involves defining a JDBC provider and data source.

Note: If you already have a regular or Universal JDBC provider defined for other application, you may use the same provider for Application Monitor by simply following thru the steps in 'Defining the JDBC provider' or 'Defining the Universal JDBC provider' and be sure the configuration of the existing provider are indeed compliance with the Application Monitor requirements.

Enabling the JDBC support configuration:
1. Login to the mainframe USS system.

2. update the property 'jdbc.enable' to 'yes' value in
    /usr/lpp/wsam/<server>/etc/bcm.properties file. For example:
    ```
    jdbc.enable=yes
    ```
3. Save the updated bcm.properties file.

Defining the JDBC provider

This configuration is to support DB2 JDBC Driver.

1. Login to the WebSphere Administration Console.
2. Select the Resources > JDBC Providers.
3. Select the <NodeName>.
4. Select the <ServerName> and click <Apply>.
5. For new Data Collector installation:
    a. Click <New>.
    b. On the configuration tab, select JDBC Providers and set it to "DB2 for zOS JDBC Providers (RRS)".
    c. Select 'Apply'
    d. Change the Name field to a uniquely identified name. For example:
        ```
        <server> DB2 zOS Local JDBC Provider (RRS)
        ```
    e. Select <Apply>.
    f. In Additional Properties table, select 'DataSources (Version 4)' or 'DataSources' option.

        Note: "DataSource (Version 4)" is for WebSphere V4. "DataSource" is for WebSphere V5. You may select either or both; this should be determined by the applications you run on this server and the datasource level they use. If you are not sure about the data source configuration, contact your Application Support person.
    g. Click <New>.
    h. Fill in the appropriate fields that define your DataSource, which is installation-specific. The following are examples:

        For the "DataSources (Version 4)":

        Name: DataSourceSample

        JNDI Name: jdbc/DataSourceSample

        Database Name: YOUR_DB_LOCATION_NAME (for example, S390LOC)

        Default User ID: ccc (Your database User ID.)

        Default User Password: *** (Your database user password.)

        For the "DataSource":

        Name: DataSourceSampleV5

        JNDI Name: jdbc/DataSourceSampleV5

        DataSource Helper Classname:
            com.ibm.websphere.rsadapter.DB2390LocalDataStoreHelper
    i. Select the appropriate database in the Component-managed Authentication Alias for database authentication in runtime for resource authentication setting to Application.
    j. Select the appropriate database in the Container-managed Authentication Alias for database authentication in runtime for resource authentication setting to Container.
    k. Select 'DefaultPrincipalMapping' option in Mapping-Configuration Alias field.

l. Select <Apply>.

m. Navigate to Additional Property: Custom Properties and add the name value pair.

   Name: databaseName

   Value: YOUR_DB_LOCATION_NAME (for example, S390LOC)

n. Click <Apply>.

6. For Data Collector upgrade, we recommend that you

   a. Backup the datasource information from your existing Application Monitor JDBC provider

   b. Delete the old/existing Application Monitor JDBC Provider

   c. Follow the instructions from the new Data Collector installation to create a new JDBC provider.

7. (Optional) You may choose to allocate more Database Connection Pool by increasing the pool size under Additional Properties > Connection Pools link, and click <Apply> to save your changes.

8. In the messages dialog box, select 'Save'.

9. In the Save to Master Configuration dialog box,

   • If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.

   • If you are NOT under ND environment, simply select <Save>.

10. You may re-verify your configuration data in /<WebSphere directory>/<server>/resources.xml via a search of db2 provider name, for example, <server> DB2 zOS Local JDBC Provider (RRS).

    Note: This file is ASCII encoded. To view it, you need to either use an editor which support ASCII encoding (e.g. viascii) or export it to a computer (UNIX or Windows) which supports the ASCII character set by default.

Defining the Universal JDBC Provider

This configuration is to support Universal JDBC Driver.

1. Login to Admin console.

2. Navigate to Resources > JDBC Provider.

3. Select the <NodeName>.

4. Then select the <ServerName> and click <Apply>.

5. Click the <New> button for a new creation or select the Universal JDBC Provider name for an update.

6. For new Data Collector installation:

   a. Click <New>.

   b. On the configuration tab, select Universal JDBC Providers and set it to 'DB2 Universal JDBC Driver Provider' .

   c. Select 'Apply'

   d. Change the Name field to a uniquely identified name. For example:

      <server> DB2 zOS Local JDBC Provider (RRS)

   e. Select <Apply>.

   f. In Additional Properties table, select 'DataSources (Version 4)' or 'DataSources' option.

> **Note:** "DataSource (Version 4)" is for WebSphere V4. "DataSource" is for WebSphere V5. You may select either or both; this should be determined by the applications you run on this server and the datasource level they use. If you are not sure about the data source configuration, contact your Application Support person.

  g. Click <New>.

  h. Fill in the appropriate fields that define your DataSource, which is installation-specific. The following are examples:

  For the "**DataSources (Version 4)**":

  Name: DataSourceSample

  JNDI Name: jdbc/DataSourceSample

  Database Name:YOUR_DB_LOCATION_NAME (for example, S390LOC)

  Default User ID: ccc (Your database User ID.)

  Default User Password: *** (Your database user password.)

  For the "**DataSource**":

  Name: DataSourceSampleV5

  JNDI Name: jdbc/DataSourceSampleV5

  i. If your datasource will be used for CMP EJB (container managed persistence), mark the checkbox for the Container managed persistence field.

  j. Select the appropriate database in the Component-managed Authentication Alias for database authentication in runtime for resource authentication setting to Application.

  k. Select the appropriate database in the Container-managed Authentication Alias for database authentication in runtime for resource authentication setting to Container.

  l. Select 'DefaultPrincipalMapping' option in Mapping-Configuration Alias field.

  m. Select <Apply>.

  n. Navigate to Additional Property: Custom Properties and add the name value pair.

  Name: databaseName

  Value: YOUR_DB_LOCATION_NAME (for example, S390LOC)

  o. Click <Apply>.

7. For Data Collector upgrade, we recommend that you

  a. Backup the datasource information from your existing Application Monitor Universal JDBC provider

  b. Delete the old/existing Application Monitor Universal JDBC Provider

  c. Follow the instructions from the new Data Collector installation to create a new Universal JDBC provider.

Adding JNDI Support

To enable JNDI event capture: (If you are not sure of this option, contact your Application Support person.)

1. The default initial context factory property is provided in the file located at /usr/lpp/wsam/<server>/etc/jndi.properties. We recommend not to delete this initial property. However, users may update jndi.properties with additional context class factory as an option.

2. Login to the WebSphere Admin Console.

3. Navigate to Servers > Application Servers option, select the <ServerName>.

4. In the Process Definition > Servant > Additional Properties:Java Virtual Machine link.

5. Insert the following value to the beginning of the Classpath field if it doesn't already exist.

   ```
   /usr/lpp/wsam/<server>/etc
   ```

6. Select <Apply>.

7. In the messages Dialog box, select 'Save'.

8. In the Save to Master Configuration dialog box,

   - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
   - If you are NOT under ND environment, simply select <Save>.

9. You may re-verify your configuration data in /<WebSphere directory>/<server>/was.env by searching the keyword server_region_classpath.

Adding JMS Support

To enable JMS event capture: (If you are not sure of this option, contact your Application Support person.)

1. Enable the JMS support configuration:

   a. Login to mainframe USS system.

   b. Edit the following properties in the /<installation directory>/wsam/<server>/etc/bcm.properties file.

      For JMS Interface Queue, update the property 'jmsqueue.enable' to 'yes' value. For example:

      ```
      jmsqueue.enable=yes
      ```

      For JMS Interface Topic, update the property 'jmstopic.enable' to 'yes' value. For example:

      ```
      jmstopic.enable=yes
      ```

   c. Save the updated bcm.properties file.

2. Login to the WebSphere Admin Console and navigate to Servers > Application Servers option, and select the <ServerName>.

3. Navigate to the Additional Properties: Custom Services.

   a. Select '-' of the probe service for an update.

   b. Insert the following value exactly as written to the beginning of the Classpath field:

      ```
      ${WAS_LIBS_DIR}/messagingImpl.jar:
      ```

      Note: The ':' is required to separate between 2 classpath values.

   c. Click <Apply>.

4. In the messages Dialog box, select 'Save'.

5. In the Save to Master Configuration dialog box,

   - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
   - If you are NOT under ND environment, simply select <Save>.

6. You may re-verify your configuration data in /<WebSphere directory>/<server>/server.xml by searching the keyword 'messagingImpl'.

7. Need to ensure the existence of messagingImpl.jar file under ${WAS_LIBS_DIR} directory path. To do so, navigate as follows:

a. At your z/OS WebSphere Admin console, select the Environment > Manage WebSphere Variables.

b. Select the <NodeName> and leave the server option blank and click <Apply> button.

c. Look for ${WAS_LIBS_DIR} and its real value (e.g., ${WAS_INSTALL_ROOT}/lib). Use <next> or <previous> link to scroll to the next or previous page, respectively, until you find it.

d. Need to look furthur for ${WAS_INSTALL_ROOT} and its real value from the previous search. (e.g., /WebSphere/V5R0M1/AppServer).

e. Then, go to the mainframe USS system and look for the existing of messagingImpl.jar file under the directory of ${WAS_LIBS_DIR}. For example,

```
cd /WebSphere/V5R0M1/AppServer/lib
ls -l messagingImpl.jar
```

If you don't see it, you need to locate this messagingImpl.jar file (via your WebSphere administrator) and update the classpath in Custom Services option.

Adding MQI Capturing Support

This support allows you to monitor the MQI events if you have MQ installed and configured in your Application Server environment. If you are not sure about this MQI event, please contact your Application Support person.

Assumption/Prerequisites:

- MQ version 5.3.1 must be installed already.
- WebSphere MQ Queue Connection and Queue Destinations must be configured under WebSphere MQ JMS Provider option via WebSphere Admin Console.

To enable MQI event capture: (If you are not sure about this option, contact your Application Support person.)

1. Enable the MQI support configuration:

   a. Login to the mainframe USS system.

   b. Update the property 'mqi.enable' to 'yes' in /usr/lpp/wsam/<server>/etc/bcm.properties file. For example:

   ```
   mqi.enable=yes
   ```

   c. Save the updated bcm.properties file.

2. Login to the WebSphere Admin Console and navigate to Servers > Application Servers option, and select the <ServerName>.

3. Select the Additional Properties: Message Listener Service > Additional Properties: Listener Ports.

4. Click <New> for creating a new listener port or select the port name for updating.

5. Fill in the appropriate fields:

   Name: `<Listener Port Name> (e.g., TestwareMQListener)`

   Initial State: `Started`

   Connection factory JNDI name: `<JNDI Name for the JMS connection factory> (e.g., jms/TestwareQCF)`

   Destination JNDI name: `<JNDI Name for the destination to be used by listener port> (e.g., queue/mdbQueue)`

6. Click <Apply> and then <OK>.

7. Navigate back to your <ServerName> page.
8. Navigate to the Additional Properties: Custom Services. .
    a. Select '-' of the probe service for an update.
    b. Insert the following value exactly as written to the beginning of the Classpath field:

        ```
        ${MQJMS_LIB_ROOT}/com.ibm.mq.jar:
        ```

        Note: The ':' is required to separate between 2 classpath values.
    c. Click <Apply>.
9. In the messages Dialog box, select 'Save'.
10. In the Save to Master Configuration dialog box,
    *   If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
    *   If you are NOT under ND environment, simply select <Save>.
11. From the menu, navigate to the following:
    *   Go to Administration < Server Management < Data Collector Configuration and select Configuration Library.
    *   Use the J2EE Default library to create a Duplicate Entry.
    *   From the Duplicate Configuration page, create a unique name for the new J2EE configuration.
    *   Save your configuration.
    *   Select the Modify button from the Configuration List page on the new J2EE configuration.
    *   In the Exclude Text box, add a Queue Name or Queue Names you don't want to monitor.
    *   In the Exclude override box, add a Queue Name you want to monitor.
    *   Save the configuration.
    *   Apply the WebSphere to this configuration.
12. You may re-verify your configuration data in /<WebSphere directory>/<server>/server.xml by searching the keyword 'com.ibm.mq'.
13. Need to ensure the existence of com.ibm.mq.jar file under ${MQJMS_LIB_ROOT} directory path. To do so, navigate as follows:
    a. At your z/OS WebSphere Admin console, select the Environment > Manage WebSphere Variables.
    b. Select the <NodeName> and leave the server option blank and click <Apply> button.
    c. Look for ${MQJMS_LIB_ROOT} and its real value (e.g., ${MQ_INSTALL_ROOT}/java/lib). Use <next> or <previous> link to scroll to the next or previous page, respectively, until you find it.
    d. Need to look furthur for ${MQ_INSTALL_ROOT} and its real value from the previous search. (e.g., /usr/lpp/mqm/V5R3M1).
    e. Then, go to the mainframe USS system and look for the existing of com.ibm.mq.jar under the directory ${MQJMS_LIB_ROOT}. For example,

        ```
        cd /usr/lpp/mqm/V5R3M1/java/lib
        ls -l com.ibm.mq.jar
        ```

        If you don't see it, you need to locate this messagingImpl.jar file (via your WebSphere administrator) and update the classpath in Custom Services.

Adding Garbage Collection Interval Support

The Data Collector communicates with the Managing Server using TCPIP sockets and RMI. One effect of using RMI is that garbage collection occurs every minute. If you don't want this to happen, you can specify the garbage collection interval explicitly to a preferred interval by specifying the parameters in the Generic JVM arguments field. These parameters must be implemented as a pair. If you already have these parameters configured at the "Chapter 8, Configuring the z/OS Data Collector Home Runtime' section, there is no need to do this unless you want to update the interval values to a different desire values.

1. Login to the WebSphere Admin Console.
2. Navigate as follows:
   a. Select the Servers > Application Servers and select the <ServerName>.
   b. Navigate to the Additional Properties: Process Definition > Servant > Additional Properties: Java Virtual machine.
   c. In the Generic JVM arguments field, append the following parameters if such parameters don't exist or simply update the interval values if they already exist.

   ```
   -Dsun.rmi.dgc.client.gcInterval=3600000
   -Dsun.rmi.dgc.server.gcInterval=3600000
   ```

   Note: These values require a dash (-) in front of each parameter, and a single space between parameters. Also, we recommend the interval value = or > than 3600000.

Adding Multiple Host Support

java.rmi.server.hostname property is optional and it is to be used if there are multiple IP stacks on the same system/LPAR. HOST_NAME is the name of your IP Address/host of your LPAR that you want the Data Collector to use for communication with the Managing Server.

1. Login to the WebSphere Administration Console.
2. Navigate as follows:
   a. Select the Servers > Application Servers option and select the <ServerName>.
   b. Navigate to the Additional Properties: Process Definition > Servant > Additional Properties: Java Virtual Machine > Additional Properties: Custom Properties.
   c. For new Data Collector installation, select <New>.
   d. In the configuration panel, enter the following name/value pair. Select <OK> after each add operation:

Name	Suggested Value
java.rmi.server.hostname[1]	HOST_NAME

   [1]java.rmi.server.hostname property is optional and it is to be used if there are multiple IP stacks on the LPAR. HOST_NAME is the name of your IP Address/host of your LPAR that you want the Data Collector to use for communication with the Managing Server.

   e. For Data Collector upgrade, verify whether the existing host name value is still valid.
3. In the Messages dialog box, select 'Save'.
4. In the Save to Master Configuration dialog box,

- If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
- If you are NOT under ND environment, simply select <Save>.

5. You may re-verify your configuration data in /<WebSphere directory>/<server>/servant.jvm options by searching the variable name (e.g., java.rmi.server.hostname).

Adding Support for Composite Requests using CTG

See CICS document for reference.

Adding Support for Composite Requests using IMS Connect

See IMS document for reference.

Controlling Instrumentation of Application Classes

WSAM uses a technique called Byte Code Instrumentation to collect Level 3 tracing data, Heap Analysis data, and Lock Contention data from your applications. BCI is controlled by the contents of the <AM_HOME>/etc/cyn.user.classes.xml file. This file can be modified in order to increase or decrease the scope of instrumentation for Heap, Lock, and Method entry and exit analysis.

1. The defineInstrumentation tag defines two broad categories of instrumentation: user class instrumentation for your homegrown J2EE applications and system class instrumentation for Application Server (WAS or WLS) infrastructure classes.

2. Multiple selectClass tags can be specified within a userClasses tag or a systemClass tag.

3. The enableSignatures tag indicates whether or not the method signature should be included in the Method Entry and Exit tracing.

4. The mask tag defines a class mask that identifies the classes that should be instrumented for Heap, Lock and Method Entry and Exit analysis. The class mask can contain '*' and '?' wildcard characters. For example, the following mask can be used to instrument all classes in the my.company package: <mask>my.company.*</mask>

5. The methods tag (and the inner methodName tags) determine which methods should be instrumented for Method Entry and Exit. There may be multiple methodName tags specified. Each tag specifies a mask optionally containing '*' and '?' wildcard characters. For example, the following masks can be used to instrument all methods that contain 'execute' and 'doTask' in their names:

```
<methods>
    <methodName>*execute*</methodName>
    <methodName>*doTask*</methodName>
</methods>
```

6. The ignoreTrivial tag determines whether or not methods should be instrumented if they are considered 'trivial'.

7. The objectAllocations tag and inner allocateClass tags define one or more class masks that identify the instantiated classes for which heap allocations are to be instrumented. Each class mask can contain '*' and '?' wildcard characters. For example, the following configuration can be used to instrument two collection classes that are allocated by your application classes:

```
<objectAllocations>
    <allocateClass>java.util.Hashtable</allocateClass>
```

```
        <allocateClass>java.util.HashMap</allocateClass>
    </objectAllocations>
```

8. The objectAllocationTimes tag specifies whether or not heap allocations should be modified so that events representing heap allocations appear in the Level 3 trace, while duration associated with heap allocations can be measured.

9. The lockAnalysis tag indicates whether or not the class should be instrumented for the Lock Analysis feature.

The default cyn.user.classes.xml file enables instrumentation for method entry and exit (level 3 tracing) for all application classes, but disables instrumentation for heap and lock analysis.

Another file is provided, with the name cyn.dev.user.classes.xml, which enables instrumentation for heap and lock analysis, as well as level 3 method entry and exit tracing.

The name of the file that is used to control instrumentation is specified by the 'userbcm.xmlfilename' property, in the appropriate bcm.properties file. By changing the value of this property, you can indicate that a different XML file be used.

Chapter 10. Troubleshooting

The following information will help you in troubleshooting problems with your installation.

Log Files

The following log files may provide some useful data for troubleshooting, with or without the assistance of the IBM® Support team. Most logs are not owned by Application Monitor but are used as a destination to receive diagnostic messages from its code.

WAS Error Logs

Application Monitor does not use this log. This is the standard WebSphere Error Log. See Appendix A, "IBM Tivoli Enterprise Console Integration," on page 127 for more information on viewing this log.

Data Collector Log

Application Monitor uses this log.

The managed system uses this log file to record major events. Some of these events pertain to the connections between the managing appliance and the managed system as well as other anomalies that might be encountered. The Data Collector log is located in the directory /usr/lpp/wsam/<server>/logs/*filename* where the filename is constructed as:

```
sysplex.machine_name.lpar_name.server_instance_name.
yyyymmddh        hmmss.address-space-id-number.datacollector.log
```

where yyyy=year, mm=month, dd=day, hh=hour, mm=minutes, ss=seconds, address-space-id-number is a decimal.

CYN1 Log

Application Monitor uses this log.

The managed system, Common Services Subsystem, uses this log (pointed to by the CYN1 proc for the CYN1 subsystem) to print information regarding the SMF records received and processed by the subsystem. It will display both informational and diagnostic messages as well. For more details on the messages, check the following manual: WebSphere® Studio Application Monitor Messages and Codes (SC31-6315-02).

Viewing the WebSphere error log:

While we have supplied a Rexx Exec in CYN.SCYNPROC, this is not a supported function and is provided on a "use as-is" basis. To view the error log, issue the TSO command:

```
    EX 'CYN.SCYNPROC(CYN1ELOG)'  'WAS.ERROR.LOG'
```

If your systems use a log name other than "was.error.log", simply substitute the log name used in your installation. If you are unsure of the log name or are

running multiple servant regions, check the JESMSGLG file for the servant region. The log file name will be identified on the BBOU0025I informational message.

Protocol Timeout

If you have a transaction that is hung or too slow, you need to do this to avoid an abend.

1. Login to the WebSphere Administration Console.
2. Navigate as follows:
   a. Select the Server > Application Servers option and select the server you want to configure for use with the Application Monitor.
   b. Navigate to the Additional Properties: Process Definition > Control > Additional Properties section.
   c. Select 'Environment Entries'.
   d. Add the following properties, as name/value pairs. Select <OK> after each add operation:

Name	Suggested Minimum Value
protocol_http_timeout_input	3600
protocol_http_timeout_output	3600
protocol_http_timeout_output_recovery	3600
protocol_http_timeout_persistentSession	3600

3. In the Messages dialog box, select 'Save'.
4. In the Save to Master Configuration dialog box,
   - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
   - If you are NOT under ND environment, simply select <Save>.
5. You may re-verify your configuration data in /<WebSphere directory>/<server>/was.env.

Chapter 11. Uninstalling the z/OS Data Collector

The following information will help you to disable, re-enable, or uninstall the z/OS Data Collector.

Disable the Application Monitor

z/OS Websphere 5

1. Login to the WebSphere Admin Console.
2. Select the Servers > Application Servers option > select the <NodeName> and select the <ServerName>.
3. Navigate to the Additional Properties: Custom Services section.
4. Click the ″-″ of the Probe Service property, and uncheck the ″startup″ checkbox.
5. Click <Apply>.
6. To disable the Data Collector Home Runtime, go back to your <ServerName> link page and navigate to Additional Properties:Process Definition > Servant> Additional Properties :JVM.
7. Remove the ″-Xrunam″ argument from the Generic JVM arguments.
8. Click <Apply>.
9. To disable the JNDI, remove the following value in the classpath if it exists.

   `/usr/lpp/wsam/<server>/etc`
10. Click <Apply>.
11. In the messages Dialog box, select 'Save'.
12. In the Save to Master Configuration dialog box,
    - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
    - If you are NOT under ND environment, simply select <Save>.
13. To disable the Application Monitor JDBC driver:
    - Login to USS mainframe system.
    - Open the /usr/lpp/wsam/<server>/etc/bcm.properties file, and update the property 'jdbc.enable' to 'no' value. For example,

      `jdbc.enable = no`
14. To disable JMS feature:
    - Login to USS mainframe system.
    - Open the /usr/lpp/wsam/<server>/etc/bcm.properties file,
      - For JMS Interface Queue, update the property 'jmsqueue.enable' to 'no' value. For example,

        `jmsqueue.enable = no`
      - For JMS Interface Topic, update the property 'jmstopic.enable' to 'no' value. For example,

        `jmstopic.enable=no`
15. To disable MQI feature:
    - Login to USS mainframe system.

- Open the /usr/lpp/wsam/<server>/etc/bcm.properties file, and update the property 'mqi.enable' to 'no' value. For example,

  ```
  mqi.enable = no
  ```

16. To disable SAM/IMS feature: Please refers to the IMS document for detail references. To disable SAM/CICS feature: Please refers to the CICS document for detail references.

17. Restart your server.

Re-enable the Application Monitor

The following instructions describe the process for re-enabling the z/OS Data Collector.

z/OS WebSphere 5

1. Login to the WebSphere Admin Console.
2. Select the Servers > Application Servers option >and the <ServerName>.
3. Navigate to the Additional Properties: Custom Services.
4. Click the "-" of the Probe Service property, and check the "startup" checkbox.
5. Click <Apply>.
6. To re-enable the Data Collector Home Runtime, go back to your <ServerName> link page and navigate to Additional Properties:Process Definition> Servant> Additional Properties: JVM.
7. Add "-Xruncyanea" in the Generic JVM arguments section.
8. Click <Apply>.
9. To re-enable JNDI, add the following value in the Classpath field if necessary. See JNDI under "Optional z/OS WebSphere 5 Support" on page 79.

   ```
   /usr/lpp/wsam/<server>/etc
   ```

10. Click <Apply>.
11. In the messages Dialog box, select 'Save'.
12. In the Save to Master Configuration dialog box,
    - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
    - If you are NOT under ND environment, simply select <Save>.
13. To re-enable the Application Monitor JDBC provider:
    - Login to USS mainframe system.
    - Open the /usr/lpp/wsam/<server>/etc/bcm.properties file, and update the property 'jdbc.enable' to 'yes' value. For example,

      ```
      jdbc.enable = yes
      ```

14. To re-enable JMS feature:
    - Login to USS mainframe system.
    - Open the /usr/lpp/wsam/<server>/etc/bcm.properties file,
      - For JMS Interface Queue, update the property 'jmsqueue.enable' to 'yes' value. For example,

        ```
        jmsqueue.enable = yes
        ```

      - For JMS Interface Topic, update the property 'jmstopic.enable' to 'yes' value. For example,

        ```
        jmstopic.enable=yes
        ```

15. To re-enable MQI feature:

- Login to USS mainframe system.
- Open the /usr/lpp/wsam/<server>/etc/bcm.properties file, and update the property 'mqi.enable' to 'yes' value. For example,

```
mqi.enable = yes
```

16. To re-enable SAM/IMS feature: Please refers to the IMS document for detail references. To re-enable SAM/CICS feature: Please refers to the CICS document for detail references.
17. Restart your server.

Uninstalling the z/OS Data Collector

The following directions describe the uninstall process for z/OS WebSphere 5.

z/OS WebSphere 5

1. Login to the WebSphere Admin Console.
2. Select Servers > Application Servers option > and the <ServerName> and select the server you want to unconfigure.
3. Uninstall Probe Services: Navigate to Additional Properties:Custom Services. Click on the checkbox of com.cyanea.websphere.ProbeService classname and select <Delete>.
4. In the Messages dialog box, select 'Save'.
5. In the Save to Master Configuration dialog box,
   - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
   - If you are NOT under ND environment, simply select <Save>.
6. Uninstall the Data Collector Home runtime properties as follows:
   a. Go to your <ServerName> link page and navigate to Additional Properties:Process Definition > Servant > Additional Properties: Java Virtual Machine
   b. Remove the following value from the Classpath field if it exists.

      ```
      /usr/lpp/wsam/<server>/etc
      ```

   c. Remove Generic JVM arguments that reference –Xruncyanea
   d. Click <Apply>.
   e. Go to Additional Properties:Custom Properties.
   f. Click on the checkbox of cyanea.home and click <Delete>.
   g. Click on the checkbox of java.rmi.server.codebase and click <Delete>.
   h. Click on the checkbox of appserver.platform if it exists and click <Delete>.
   i. Click on the checkbox of java.rmi.server.hostname if it exists and click <Delete>.
   j. Click on the checkbox of sam.codepage if it exists, and click <Delete>.
7. In the Messages dialog box, select 'Save'.
8. In the Save to Master Configuration dialog box,
   - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
   - If you are NOT under ND environment, simply select <Save>.
9. Uninstall SMF support and protocol HTTP Timeout option as follows:

a. Go to your <ServerName link> page and navigate to Additional Properties:Process Definition > Control > Additional Properties:Environment Entries.

b. Remove the following properties if they exist, for example:

```
server_SMF_container_interval_enabled = 1
server_SMF_interval_length = 120
server_SMF_server_interval_enabled = 1
server_SMF_web_container_interval_enabled=1
```

c. Remove the following properties if they exist, for example:

```
protocol_http_timeout_input=3600
protocol_http_timeout_output=3600
protocol_http_timeout_output_recovery=3600
protocol_http_timeout_persistentSession=3600
```

10. In the Messages dialog box, select 'Save'.

11. In the Save to Master Configuration dialog box,
    - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
    - If you are NOT under ND environment, simply select <Save>.

12. Uninstall PMI support: Go to your <ServerName> link page and navigate to Additional Properties: Performance Monitoring Service. Deselect "Startup" checkbox and select "none" in the "initial specification level" option.

13. In the Messages dialog box, select 'Save'.

14. In the Save to Master Configuration dialog box,
    - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.
    - If you are NOT under ND environment, simply select <Save>.

15. Uninstall the server region libpath as follows:
    a. Login to Admin console and navigate as follows:
       1) Select the Servers > Application Servers option > select the <NodeName> and select the <ServerName>.
       2) Navigate to Additional Properties: Process Definition > Servant > Additional Properties: Environment Entries.
       3) Select the LIBPATH property entry.
       4) Remove the following values if they exist:
          ```
          usr/lpp/wsam/<server>/lib:/usr/lpp/cicists/gateway/
             ctg/deployable
          ```

          Note: If LIBPATH property only contains above Data Collector property, you can simply do the following:
          a) Select the checkbox of LIBPATH property.
          b) Select the <Delete> button.
       5) In the Message dialog box, select 'Save'.
       6) In the Save to Master Configuration dialog box,
          - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select 'Save'.
          - If you are NOT under ND environment, simply select 'Save'.

16. Uninstall JDBC Providers
    a. Login to WebSphere Admin Console.

b. Go to Resources > JDBC Providers.

c. Select the <NodeName> and the <ServerName> and click <Apply>.

d. Select the checkbox of the Application Monitor JDBC provider and/or Application Monitor Universal JDBC provider and click <Delete>. For example, the provider names can be:

   `"<server>DB2 390 Local JDBC Driver"`

   `"<server>DB2 Universal JDBC Driver"`

e. In the Messages dialog box, select 'Save'.

f. In the Save to Master Configuration dialog box,

   • If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.

   • If you are NOT under ND environment, simply select <Save>.

g. To unconfigure the Application Monitor JDBC option:

   • Login to USS mainframe system.

   • Open the /usr/lpp/wsam/<server>/etc/bcm.properties file, and update the property 'jdbc.enable' to 'no' value. For example,

     `jdbc.enable = no`

17. Unconfigure JNDI support

    If previous "Uninstall Probe Services" step is not executed, do the following:

    a. Login to the WebSphere Admin Console and navigate to Servers > Application Servers option and select your <ServerName>.

    b. In the Process Definition > Server > Additional Properties:Java Virtual Machine link, remove the following value from the Classpath field and select <Apply>.

       `/usr/lpp/wsam/<server>/etc`

    c. In the messages Dialog box, select 'Save'.

    d. In the Save to Master Configuration dialog box,

       • If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select <Save>.

       • If you are NOT under ND environment, simply select <Save>.

    e. You may re-verify your configuration data in /<WebSphere directory>/<server>/was.env by searching the keyword server_region_classpath.

18. To unconfigure JMS feature:

    • Login to USS mainframe system.

    • Open the /usr/lpp/wsam/<server>/etc/bcm.properties file,

      – For JMS Interface Queue, update the property 'jmsqueue.enable' to 'no' value. For example,

        `jmsqueue.enable = no`

      – For JMS Interface Topic, update the property 'jmstopic.enable' to 'no' value. For example,

        `jmstopic.enable=no`

19. To unconfigure MQI feature:

    • Login to USS mainframe system.

    • In the /usr/lpp/wsam/<server>/etc/bcm.properties file, set the property 'mqi.enable' to 'no' value. For example,

      `mqi.enable = no`

- Navigate to Servers > Application Server Options > Select the <ServerName>. Select the Additional Properties: Message Listener Service link.
- Select the Additional Properties: Listener Ports link.
- Select the checkbox of the Application Monitor Listener Port and click <Delete>. For example, listener port name can be 'TestwareMQListener'. Click <Apply> or <OK>.
- In the messages Dialog box, select 'Save'.
- In the Save to Master Configuration dialog box:
    - If you are under ND environment, be sure the checkbox 'Synchronize changes with Nodes' is selected and then select 'Save'.
    - If you are NOT under ND environment, simply select 'Save'.
20. To unconfigure SAM/IMS feature: Please refers to the IMS document for detail references. To unconfigure SAM/CICS feature: Please refers to the CICS document for detail references.

Part 4. The Data Collector for Multiplatforms

Chapter 12. Preparing to Install

The following are the pre-installation requirements for installing and using the Data Collector.

Requirements for Installing the Data Collector

The following are the requirements for being able to install and use the Data Collector.

Note: For manual installation instructions, see Appendix D.

Table 6. Data Collector Requirements

Platform	Application Server	Additional Requirements
AIX 5.1	WebSphere 5.0.2.6, 5.0.2.8, 5.1.1 and 6.0 WebSphere Portal 5.0.2	Check that the following packages are installed. (The numbers may be these or later file set numbers.) • bos.perf.diag_tool 5.1.0.25 Performance Diagnostic Tool • bos.perf.libperfstat 5.1.0.35 Performance Statistics Library • bos.perf.perfstat 5.1.0.36 Performance Statistics Interface • bos.perf.tools 5.1.0.35 Base Performance Tools
AIX 5.2	WebSphere 5.0.2.6, 5.0.2.8, 5.1.1 and 6.0 WebSphere Portal 5.0.2	Check that the following packages are installed. (The numbers may be these or later file set numbers.) • bos.perf.diag_tool 5.2.012 Performance Diagnostic Tool • bos.perf.libperfstat 5.2.0.10 Performance Statistics Library • bos.perf.perfstat 5.2.0.14 Performance Statistics Interface • bos.perf.tools 5.2.0.17 Base Performance Tools
AIX 5.3	WebSphere 5.1.1 and 6.0	Check that the following packages are installed. (The numbers may be these or later file set numbers.) • bos.perf.diag_tool 5.2.012 Performance Diagnostic Tool • bos.perf.libperfstat 5.2.0.10 Performance Statistics Library • bos.perf.perfstat 5.2.0.14 Performance Statistics Interface • bos.perf.tools 5.2.0.17 Base Performance Tools
Solaris 8	WebSphere 5.0.2.6, 5.0.2.8, 5.1.1 and 6.0 WebSphere Portal 5.0.2, WebLogic 7 sp5, 8.1 sp3	

Table 6. Data Collector Requirements (continued)

Platform	Application Server	Additional Requirements
Solaris 9	WebSphere 5.0.2.6, 5.0.2.8, 5.1.1 and 6.0 WebSphere Portal 5.0.2, WebLogic 7 sp5, 8.1 sp3	
HP-UX 11.iv1	WebSphere 5.0.2.6, 5.0.2.8, 5.1.1 and 6.0 WebLogic 7 sp5, 8.1 sp3	In order to generate a Java heap dump, you must rebuild the kernel. See "Rebuild the HP-UX Kernel" on page 115.
Windows 2000 sp4	WebSphere 5.0.2.6, 5.0.2.8, 5.1.1 and 6.0 WebSphere Portal 5.0.2	
Windows 2003	WebSphere 5.0.2.6, 5.0.2.8, 5.1.1 and 6.0 WebSphere Portal 5.0.2	
RHEL 2.1(Intel)	WebSphere 5.0.2.6, 5.0.2.8, 5.1.1 WebLogic 7 sp5, 8.1 sp3, WebSphere Portal 5.0.2	
RHEL 3.0(Intel)	WebSphere 5.1.1, Portal 5.0.2, and 6.0 WebLogic 8.1 sp3	
z/Linux SuSe 8.1	WebSphere 5.1.1 and 6.0	

Note: WebLogic Application Server with JRockit JVM is not suuported.

Hardware Requirements

Require 200MB of disk space for most installations.

Increase the Heap Size

We recommend you increase the heap size configuration by 64 MB above the current configuration. To do this follow the steps below for each server that you want to configure for the data collector:

Go to WebSphere Admin Console and select Servers > Application Servers > <server name> > Process Definition > Virtual Machine.

Edit the field Maximum Heap Size. If the default is not specified then it assumes 256 so add 320.

For WebLogic: edit your startup script and change the value of the variable JAVA_OPTIONS (for example, if the default is -ms256m -mx256m then change it to -ms256m -mx320m).

The WSAM Data Collector also requires some native memory work. Make sure that your system has sufficient physical memory and page space.

Required authorization role

The user who installs the Data Collector must have privileges (read, write and execute) of accessing J2EE Application Server (WebSphere and WebLogic Application Server).

Note: Root (UNIX-only) or Administrator (Windows-only) privileges are not required unless your Application Server is owned by root or administrator user.

Cluster Considerations

To install on a cluster, run the installer on each node that you wish to install upon. It is recommended that you create a response file and use the silent installer mode if you have to install across multiple nodes in a cluster.

Chapter 13. Installation and Configuration

This chapter describes how to install the Data Collector for distributed platforms.

The installation procedure uses a graphical installer. Alternately, it is possible to install the Data Collector manually.

Installing the Data Collector

The following instructions describe how to install the Data Collector onto your system. Follow the instructions appropriate for the platform and Application Server.

General Information

1. Data Collector installation can be performed on single or multiple Application Servers in Network Deployment (ND) or Non-network Deployment environments.
2. Data collector installation cannot span over multiple nodes.
3. The installer has an interactive (GUI) mode and a non-interactive (silent) mode.
4. If you select a server which has another JVM (-Xrun profile) running on it then the installation on that server will be skipped.

Installing Data Collectors that Monitor WebSphere

Gather Configuration Information
- WebSphere instance hostname and SOAP port (Default value is 8880, it may be different for your environment.)
  - If using ND, provide the hostname and SOAP port of the Deployment Manager.

If Global Security is turned on, provide the WebSphere username and password of a WebSphere user with administrative rights.:
- WebSphere Username
- WebSphere Password

Installation
This section contains instructions to install a Data Collector that monitors WebSphere on either a UNIX or Windows system. Follow the instructions appropriate to the platform on which you are installing the Data Collector.

To install the Data Collector on UNIX with WebSphere:
1. Start your J2EE server.

   Note: If you are in an ND environment then you must start the following.
   - Deployment Manager
   - Node Agent
   - WebSphere instances to be monitored
2. Log in as a user who has permissions to create the installation directory, for example: /opt/ibm/wsam/.

3. Set up WAS_HOME (should point to your local WebSphere Application Server home directory), JAVA_HOME, and include the Java bin directory in the PATH:

   Recommended: Run setupCmdLine.sh (located in the bin directory of WebSphere installation directory) to set the following variable.

   Solaris, HP-UX, AIX, Intel/Linux and z/Linux

   For WebSphere 5.x:

   ```
   WAS_HOME=/opt/WebSphere/AppServer; export WAS_HOME
   ```

   For WebSphere 6.x:

   ```
    WAS_HOME=/opt/WebSphere/AppServer/profiles/default;
   export WAS_HOME
       JAVA_HOME=/opt/WebSphere/AppServer/java; export JAVA_HOME
   PATH=${JAVA_HOME}/bin:${PATH}; export PATH
   ```

   Note: To verify this has completed correctly issue the following commands:

   ```
           echo $WAS_HOME
       echo $JAVA_HOME
   echo $PATH
   ```

   and verify the output from the echo command to your inputs.

4. Locate the file MPDCInstall.tar in the installation media. Extract the contents to a temporary directory:

   ```
   mkdir /tmp/wsaminst
   cp MPDCInstall.tar /tmp/wsaminst
   cd /tmp/wsaminst
   tar xf MPDCInstall.tar
   ```

5. If you want to perform an Interactive (GUI) install go to Step 5a. If you want to perform a non-Interactive (silent) install go to step 5b.

   Note: Do not re-run installer without restoring your original configuration. The location of the backup of the configuration performed by the installer can be found in the log file.

   a. If running the installation on a remote server, export the display to your local workstation using the following command:

      ```
          DISPLAY=<workstation>:0; export DISPLAY
      ```

      Run installer (You must be in the bin directory of the installer to work properly.):

      ```
      cd /tmp/wsaminst/Installer-DC/bin/
      sh install-DC.sh
      ```

   b. Create a copy of the sample response file.

      ```
      cd /tmp/wsaminst/Installer-DC/etc
      cp dcInputs_Sample.txt dcInputs.txt
      ```

      Edit the response file dcInputs.txt. The parameters required are documented within the text file.

      Run the installer in silent mode.

      ```
      cd /tmp/wsaminst/installer-DC/bin/
      sh install-DC.sh -silent ../etc/dcInputs.txt
      ```

6. Restart the Application Server on which you installed the Data Collector.

7. Go to the Application Monitor of the Managing Server and configure the Data Collector you installed.

Note: Make sure the Application Server type and version, and the operating system type and version you are using are supported. (If the installation environment does not meet the prerequisites, the installer prerequisite check will fail and you will be unable to continue the installation. If you wish to proceed with the installation, you can bypass the prerequisite check by passing the parameter "-force" to install-DC.sh.)

Note: The installer will create log files in /tmp/ibm_am_installer_dc/. After installation, you can find a copy of the logs in the <am_home>/logs directory.

Note: The installer will save your previous WebSphere configuration before installation. Refer to the log file for the location of the backup.

To install the Data Collector on Windows with WebSphere:

1. Start your J2EE server.

   Note: If you are in an ND environment then you must start the following.
   - Deployment Manager
   - Node Agent
   - WebSphere instances to be monitored

2. Log in as a user who has permissions to create the installation directory, for example: c:\opt\ibm\wsam\.

3. Set up WAS_HOME (should point to your local WebSphere Application Server home directory), JAVA_HOME, and include the Java bin directory in the PATH, for example:

   Recommended: Run setupCmdLine.bat (located in the bin directory of WebSphere installation directory) to set the following variable.

   For WebSphere 5.x:

   ```
   set WAS_HOME=c:\Program Files\WebSphere\Appserver
   ```

   For WebSphere 6.x:

   ```
   set WAS_HOME=c:\Program
   Files\WebSphere\Appserver\profiles\default
   set     JAVA_HOME=c:\Program Files\WebSphere\Appserver\java
   set PATH=%JAVA_HOME%\bin; %PATH%
   ```

4. Locate the file MPDCInstall.tar in the installation media. Extract the contents to a temporary directory:

   ```
   mkdir c:\temp\wsaminst
   ```

   Uncompress MPDCInstall.tar into c:\temp\wsaminst.

5. If you want to perform an Interactive (GUI) install go to Step 5a. If you want to perform a non-Interactive (silent) install go to step 5b.

   Note: Do not re-run installer without restoring your original configuration. The location of the backup of the configuration performed by the installer can be found in the log file.

   a. Run installer:

      ```
      cd c:\temp\wsaminst\Installer-DC\bin
      ```

      Note: If you have a multiple IP addresses then edit the file IPAddress_List.txt and add all the IP addresses including local host IP separated line by line.

      ```
      install-DC.bat
      ```

b. Create a copy of the sample response file.

```
cd c:\temp\wsaminst\Installer-DC\etc
copy dcInputs_Sample.txt dcInputs.txt
```

Edit the response file dcInputs.txt in the installer bin directory. The parameters required are documented within the text file.

Run the installer in silent mode.

```
cd c:\temp\wsaminst\Installer-DC\bin
install-DC.bat -silent ..\etc\dcInputs.txt
```

Note: Make sure the Application Server type and version, and the operating system type and version you are using are supported. (If the installation environment does not meet the prerequisites, the installer prerequisite check will fail and you will be unable to continue the installation. If you wish to proceed with the installation, you can bypass the prerequisite check by passing the parameter "-force" to install-DC.bat.)

Note: The installer will create log file in the <TEMP>\ibm_am_installer_dc directory, where TEMP is a Windows environment variable. You can locate the value of TEMP by typing:

```
echo %TEMP%
```

After installation, you can find a copy of the logs in the <AM_HOME>\logs directory.

Note: The installer will save your previous WebSphere configuration before installation. Refer to the log file for the location of the backup.

6. Restart the Application Server on which you installed the Data Collector.
7. Go to the Application Monitor of the Managing Server and configure the Data Collector you installed.

Installing Data Collectors that Monitor WebLogic

This section contains instructions to install a Data Collector that monitors WebLogic on a UNIX system. Follow the instructions appropriate to the platform on which you are installing the Data Collector.

Note: Servers in a cluster must be started using a Node Manager process. The installer does not support an environment where servers in a cluster are started using scripts similar to startManagedWebLogic.sh.

To install the Data Collector on UNIX with WebLogic:

1. Start your J2EE server.

   Note: If you are in a managed server environment then you must start the following.
   - Admin Server
   - Node Manager
   - WebLogic managed instances to be monitored

2. Log in as a user who has permissions to create the installation directory, for example: /opt/ibm/wsam/. Throughout this section, the directory you create will be referred to as <AM_HOME>.

3. Set up WL_HOME (should point to your local WebLogic Application Server home directory) and JAVA_HOME, and include the Java bin directory in the PATH, for example:

   Recommended: Run setEnv.sh or setEnv.bat (located in the same directory with start WebLogic scripts) to set the following variable.

   WebLogic 7.0 :

   ```
   WL_HOME=/opt/bea/weblogic70; export WL_HOME
   ```

   Point JAVA_HOME to the location of the JDK.

   ```
   PATH=${JAVA_HOME}/bin:${PATH}; export PATH
   ```

   WebLogic 8.1 :

   ```
       WL_HOME=/opt/bea/weblogic81; export WL_HOME
   ```

   Point JAVA_HOME to the location of the JDK.

   ```
   PATH=${JAVA_HOME}/bin:${PATH}; export PATH
   ```

   Note: To verify this has completed correctly issue the following command:

   ```
           echo $WL_HOME
   ```

   ```
   echo $JAVA_HOME
   ```

   ```
   echo $PATH
   ```

   and verify the output from the echo command to your inputs.

4. Locate the file MPDCInstall.tar in the installation media. Extract the contents to a temporary directory:

   ```
   mkdir /tmp/wsaminst
   ```

   ```
   cp MPDCInstall.tar /tmp/wsaminst
   ```

   ```
   cd /tmp/wsaminst
   ```

   ```
   tar xf MPDCInstall.tar
   ```

5. If you want to perform an Interactive (GUI) install go to Step 5a. If you want to perform a non-Interactive (silent) install go to Step 5b.

   Note: Do not re-run installer without restoring your original configuration. The location of the backup of the configuration performed by the installer can be found in the log file.

   a. If running the installation from a remote workstation, export the display to your local machine using the following command:

   ```
        DISPLAY=<workstation>:0; export DISPLAY
   ```

   Run installer (You must be in the bin directory of the installer to work properly):

   ```
   cd /tmp/wsaminst/Installer-DC/bin/
   ```

   ```
   sh install-DC.sh
   ```

   b. Create a copy of the sample response file.

   ```
   cd /tmp/wsaminst/Installer-DC/etc
   ```

   ```
   cp dcInputs_Sample.txt dcInputs.txt
   ```

   Edit the response file dcInputs.txt. The parameters required are documented within the text file.

   Run the installer in silent mode.

   ```
   cd /tmp/wsaminst/installer-DC/bin/
   ```

   ```
   sh install-DC.sh -silent ../etc/dcInputs.txt
   ```

6. Start your server using the startup script and make sure you redirect the output of the server to the path that you specified during the installation. For

example, sh startWeblogic.sh >/opt/bea/weblogic/logs/stdout.log (This is the path that you gave during the installation.)

7. If Application Server is an unmanaged process (Standalone - Single installation) then go to <AM_HOME>/bin/PostInstallationInstructions.txt file and follow the instructions.

8. Set the following environment variable in <WL_HOME>/common/bin/commEnv.sh file:

   For HP-UX

   SHLIB_PATH=<AM_HOME>/lib:$SHLIB_PATH

   For Linux or Solaris

   LD_LIBRARY_PATH=<AM_HOME>/lib:$LD_LIBRARY_PATH

9. Restart the node manager (only if it is a managed process) and restart the Application Server on which you installed the Data Collector.

10. Go to the Application Monitor of the Managing Server and configure the Data Collector you installed.

    Note: Make sure the Application Server type and version, and the operating system type and version you are using are supported. (If the installation environment does not meet the prerequisites, the installer prerequisite check will fail and you will be unable to continue the installation. If you wish to proceed with the installation, you can bypass the prerequisite check by passing the parameter "-force" to install-DC.sh.)

    Note: The installer will create log files in /tmp/ibm_am_installer_dc/. After installation, you can find a copy of the logs in the <AM_HOME>/logs directory.

    Note: The installer will save your previous WebLogic configuration before installation. Refer to the log file for the location of the backup.

    Note: In a WebLogic managed environment, when the installer runs remotely to the location of the Admin server, the installer is unable to create a backup of the local config.xml file for the server(s) where the Data Collector is going to be installed.

Node Authentication

In Node Authentication related configuration, the Kernel, Data Collectors or Port Consolidator operate in secure mode either individually or in combination. But the configuration changes are common for all the modes except that a particular component can be made to operate in a different mode by changing the property security.enabled on that particular component.

Kernel Related Changes

In Kernel properties file (kl1.properties and kl2.properties) do the following:

Note: All the properties are already documented in the appropriate property file. Just uncommenting the data and giving the right value is recommended.
To enable Kernel to operate in secure mode:
security.enabled=true Only when this property is true along with the above property, then the CodeBase server will operate in secure mode:
codebase.security.enabled=true

Data Collector Related Changes

In the Data Collector properties file (datacollector.properties) do the following:

Note: If the Data Collector has already been configured, you must delete the server generated datacollector.properties file, and then restart the server after making the following changes.

To enable Data Collector to operate in secure mode: security.enabled=true Define AM_HOME accordingly. Path of the certificate to use when the Data Collector is in secure mode: certificate.path=<AM_HOME>/etc/dctomgmt.cer: <AM_HOME>/etc/dctoproxy.cer Keystore location of the Data Collector: keystore.location=<AM_HOME>/etc/CyaneaDCStore Other properties that you need NOT change and are set by default or should be changed when a specific situation arises. Keystore password of Data Collector server: keystore.storepass=oakland94612 Keystore key password of Data Collector server: keystore.keypass=oakland94612 User ID passed to other end for authentication: nodeauth.userid=cyaneadc

Node Authentication Related Properties in Port Consolidator

In the Proxy properties file (proxy.properties) do the following:

To enable port consolidator to operate in secure mode: security.enabled=true Path of the certificate to use when port consolidator is in secure mode: certificate.path=<AM_HOME>/etc/proxytomgmt.cer: <AM_HOME>/etc/proxytodc.cer Keystore location of the port consolidator: keystore.location=<AM_HOME>/etc/CyaneaProxyStore Keystore password of port consolidator server: keystore.storepass=oakland94612 Keystore key password of port consolidator server: keystore.keypass=oakland94612 User ID passed to other end for authentication: nodeauth.userid=cyaneaproxy

Node Authentication Related Properties for the Visualization Engine

Here <AM_HOME> is /opt/ibm/wsam you need to replace accordingly. All the following properties need to be set as System Properties using AppServer AdminConsole for WebSphere or in the startWSAM_Weblogic.sh script for WebLogic. Path of the certificate to use when security is enabled for the VE: certificate.path=<AM_HOME>/etc/mgmttomgmt.cer Keystore location of the Management Server: keystore.location=<AM_HOME>/etc/CyaneaMgmtStore Keystore password of Management Server: keystore.storepass=cyanea94612 Keystore key password of Management Server: keystore.keypass=cyanea94612 User ID passed to other end for authentication: nodeauth.userid=cyaneamgmt

Keystore Managment and Populating Certificates

You do not have to do the following unless you want to create unique certificates with a new storepass and keypass. These commands will populate a new store with those certificates.

For populating all new keystores do the following: There are 3 stores used by WSAM: MSStore, DCStore, ProxyStore.

MSStore contains:
mgmttomgmt.cer (cn=cyaneamgmt)
dctomgmt.cer (cn=cyaneadc)
proxytomgmt.cer (cn=cyaneaproxy)

DCStore contains:
proxytodc.cer (cn=cyaneaproxy)
mgmttodc.cer (cyaneamgmt)

ProxyStore contains:
mgmttoproxy.cer (cn=cyaneamgmt)
dctoproxy.cer (cn=cyaneadc)

To execute the ./keytool commands, you must be in the java/bin directory. This is the script with the necessary parameters:

./keytool -genkey -alias **\<alias name\>** -keyalg RSA -keysize 1024 -sigalg MD5withRSA -validity 2000 -keypass **\<keypass\>** -keystore ./**\<storename\>** -storepass **\<storepass\>** -dname "cn=cyaneamgmt, OU=CyaneaComp, O=Cyanea, L=Oakland, ST=CA, C=US"

The following scripts will create all the necessary stores and certificates:

Note: Replace "oakland1" with your custom keypass and "oakland2" with your custom storepass. Replace "IBMMSStore", "IBMDCStore", and "IBMProxyStore" with your custom store names.

./keytool -genkey -alias mgmttomgmt -keyalg RSA -keysize 1024 -sigalg MD5withRSA -validity 2000 -keypass oakland1 -keystore ./IBMMSStore -storepass oakland2 -dname "cn=cyaneamgmt, OU=CyaneaComp, O=Cyanea, L=Oakland, ST=CA, C=US" ./keytool -genkey -alias dctomgmt -keyalg RSA -keysize 1024 -sigalg MD5withRSA -validity 2000 -keypass oakland1 -keystore ./IBMMSStore -storepass oakland2 -dname "cn=cyaneadc, OU=CyaneaComp, O=Cyanea, L=Oakland, ST=CA, C=US" ./keytool -genkey -alias proxytomgmt -keyalg RSA -keysize 1024 -sigalg MD5withRSA -validity 2000 -keypass oakland1 -keystore ./IBMMSStore -storepass oakland2 -dname "cn=cyaneaproxy, OU=CyaneaComp, O=Cyanea, L=Oakland, ST=CA, C=US" ./keytool -genkey -alias proxytodc -keyalg RSA -keysize 1024 -sigalg MD5withRSA -validity 2000 -keypass oakland1 -keystore ./IBMDCStore -storepass oakland2 -dname "cn=cyaneaproxy, OU=CyaneaComp, O=Cyanea, L=Oakland, ST=CA, C=US" ./keytool -genkey -alias mgmttodc -keyalg RSA -keysize 1024 -sigalg MD5withRSA -validity 2000 -keypass oakland1 -keystore ./IBMDCStore -storepass oakland2 -dname "cn=cyaneamgmt, OU=CyaneaComp, O=Cyanea, L=Oakland, ST=CA, C=US" ./keytool -genkey -alias mgmttoproxy -keyalg RSA -keysize 1024 -sigalg MD5withRSA -validity 2000 -keypass oakland1 -keystore ./IBMProxyStore -storepass oakland2 -dname "cn=cyaneamgmt, OU=CyaneaComp, O=Cyanea, L=Oakland, ST=CA, C=US" ./keytool -genkey -alias dctoproxy -keyalg RSA -keysize 1024 -sigalg MD5withRSA -validity 2000 -keypass oakland1 -keystore ./IBMProxyStore -storepass oakland2 -dname "cn=cyaneadc, OU=CyaneaComp, O=Cyanea, L=Oakland, ST=CA, C=US"

After creating the 3 Stores, extract the certificates with the following command. This will extract the certificates, thumbprint, and privkey. You are only concerned with the *.cer files.

Note: You need to be on the Managing Server machine to run this command and you may also have to export JAVA_HOME and PATH as you did during the

Managing Server installation.
java -classpath **<MS_AM_HOME>**/lib/common.jar
com.cyanea.common.security.CynKeyStoreGen **<store name> <storepass> <alias name> <keypass>**For example: java -classpath /opt/IBM/wsam/lib/common.jar com.cyanea.common.security.CynKeyStoreGen ./IBMMSStore oakland2 mgmttomgmt oakland1 After you have extracted your files, copy the certificates and Stores to the following locations:

<MS_AM_HOME>/etc
MSStore
mgmttoproxy.cer
mgmttomgmt.cer
mgmttodc.cer **<DC_HOME>/etc**
DCStore
ProxyStore
proxytomgmt.cer
proxytodc.cer
dctoproxy.cer
dctomgmt.cer

Configure components to use new keystores and certificates:

1. Modify <MS_AM_HOME>/bin/setenv.sh. At the end of the script you will need to modify the following lines with the new keystore name, storepass and keypass:

```
KEYSTR_LOC=<AM_HOME_OS>/etc/IBMMSStore
KEYSTR_PASS=oakland2
KEYSTR_KEYPASS=oakland1
```

2. Modfy the VE with the new keystore name, storepass and keypass according to the steps listed above.

3. Modify <Data Collector Installation Directory>/etc/datacollector.properties file with the new storename, storepass and keypass.

4. Restart all newly secured components.

Adding MQ Support

To enable MQ monitoring on WebSphere: set the following system property:

```
am.ext.dirs=<MQ_INSTALL_ROOT>/java/lib
```

Chapter 14. Customization

The following provide instructions for customizing your Data Collector.

Rebuild the HP-UX Kernel

The kernel parameters maxdsiz and maxdsiz_64bit limit the data segment size of a process in HP-UX. In order to generate a Java heap dump, the parameters must be set to at least 1.6 times the size of the Java heap size in the Application Server.

To configure HP-UX to provide a Java heap dump:

1. Use kmtune to set the parameters maxdsiz and maxdsiz_64bit to at least 1.6 times the size of the Java heap size in the Application Server.
2. Rebuild the kernel.
3. Reboot the node.

   Note: Refer to the HP-UX documentation for details on how to configure the kernel memory parameters.

Configuring Web Servers

In order to monitor Web Servers using the Web Server Overview feature, you must configure your Web Servers appropriately. This feature is available for Apache and IBM HTTP servers.

To configure Web Servers to be monitorable by the Web Servers Overview:

1. Edit the httpd.conf file, located in the conf subdirectory of the Web Server installation directory. For example, in /opt/IBMHTTPServer/conf.

   a. Remove comments (#) from the following lines in httpd.conf:

   ```
   ExtendedStatus On
   LoadModule status_module       libexec/mod_status.so
   AddModule mod_status.c
   ```

   b. Add the following lines to httpd.conf. Replace <Polling Agent IP Address> with the domain of the Managing Server:

   ```
   # configuration for mod_status
   <Location /server-status>
   SetHandler server-status
   Order deny,allow

   Deny from all

   Allow from all <Polling Agent IP Address>
   </Location>
   ```

   c. Save your changes.

Configuring Your Firewall

Follow the instructions below to configure the firewall between the Data Collector and the Managing Server.

To configure your firewall:

1. Open the following ports on the firewall from both directions: 9103-9104 9111 9118-9123 9126 9129. (Assuming you used the default settings.)

2. Update the datacollector.properties file (on the maching running the Data Collector). This is typically located at /opt/ibm/wsam/etc (the installation directory):

```
probe.rmi.port=8300
probe.controller.rmi.port=8200
```

3. If there is more than one Data Collector installed on a node, you must open a port for each Data Collector in both ranges starting from 8200 and 8300. Then assign unique values for each in the respective datacollector.properties files.

Note: You can use the optional component, Port Consolidator, to minimize the number of ports required.

Parameters Specified with Multiple Network Cards

To install multiple network cards: Make sure that the IP specified for the Data Collector server are IPs that can be used to communicate with each other (i.e if there is a network config where one of the IPs does not have a path to the other box, don't use that IP).

1. On the Data Collector machines, define an additional Java system property and set it to the IP address of the Data Collector:

```
java.rmi.server.hostname
```

2. On the Data Collector machine, in the $AM_HOME/etc/datacollector.properties file change the kernel.codebase and kernel.rfs.address to point to the Managing Server IP. If there are any generated datacollector property files (these have names like datacollector.properties.<appservername>... or <hostname>.<appservername>.datacollector.properties....,) you will need to remove those. They will be regenerated when the Data Collector starts.

Nested Requests

For WebSphere, we support the following nested requests:

Functions	
Servlet	was<VERSION>_servlet.xml
EJB	was<VERSION>_ejb.xml
JDBC	was<VERSION>_jdbc.xml
JCA	was<VERSION>_jca.xml
JNDI	was<VERSION>_jndi.xml
JMS	was<VERSION>_jmst.xml, was<VERSION>_jmsq.xml
MQI	was<VERSION>_jbsmqi.xml

To disable a nested requests, rename or remove the corresponding xml files from <AM_HOME>/etc directory. For example, to disable JMS nested requests for websphere 511, remove was51_jmst.xml and was51_jmsq.xml

For WebLogic, we support the following nested requests:

Functions	
Servlet	wls<VERSION>_servlet.xml
EJB	wls<VERSION>_ejb.xml

Functions	
JDBC	wls<VERSION>_jdbc.xml
JMS	wls<VERSION>_jms.xml
JNDI	wls<VERSION>_jndi.xml

To disable a nested requests, rename or remove the corresponding xml files from <AM_HOME>/etc directory.

For WebSphere portal, we support the following nested requests:

Functions	
Portal page	wps<VERSION>_page.xml
Portlet	wps<VERSION>_portlet.xml
Authentication	wps<VERSION>_login.xml
Authorization	wps<VERSION>_authorization.xml
Credential Vault	wps<VERSION>_credentialvault.xml
Content Access	wps<VERSION>_contentaccess.xml

To disable a nested requests, rename or remove the corresponding xml files from <AM_HOME>/etc directory.

For JDBC Adapter, we support the following nested requests:

Functions	
JDBC pool resource	wbi_jdbc_pool.xml
JDBC	wbi_jdbc_sql.xml
Requests	wbi_jdbc_requests.xml
MQI	wbi_mqi.xml
Serialization	wbi_serialize.xml

To disable a nested requests, rename or remove the corresponding xml files from <AM_HOME>/etc directory.

Controlling Instrumentation of Application Classes for Heap, Lock and L3 Method Analysis

WSAM uses a technique called Byte Code Instrumentation to collect Level 3 tracing data, Heap Analysis data, and Lock Contention data from your applications. BCI is controlled by the contents of the <AM_HOME>/etc/cyn.user.classes.xml file. This file can be modified in order to increase or decrease the scope of instrumentation for Heap, Lock, and Method entry and exit analysis.

1. The defineInstrumentation tag defines two broad categories of instrumentation: user class instrumentation for your homegrown J2EE applications and system class instrumentation for Application Server (WAS or WLS) infrastructure classes.

2. Multiple selectClass tags can be specified within a userClasses tag or a systemClass tag.

3. The enableSignatures tag indicates whether or not the method signature should be included in the Method Entry and Exit tracing.

4. The mask tag defines a class mask that identifies the classes that should be instrumented for Heap, Lock and Method Entry and Exit analysis. The class mask can contain '*' and '?' wildcard characters. For example, the following mask can be used to instrument all classes in the my.company package: <mask>my.company.*</mask>

5. The methods tag (and the inner methodName tags) determine which methods should be instrumented for Method Entry and Exit. There may be multiple methodName tags specified. Each tag specifies a mask optionally containing '*' and '?' wildcard characters. For example, the following masks can be used to instrument all methods that contain 'execute' and 'doTask' in their names:

```
<methods>

    <methodName>*execute*</methodName>

    <methodName>*doTask*</methodName>

</methods>
```

6. The ignoreTrivial tag determines whether or not methods should be instrumented if they are considered 'trivial'.

7. The objectAllocations tag and inner allocateClass tags define one or more class masks that identify the instantiated classes for which heap allocations are to be instrumented. Each class mask can contain '*' and '?' wildcard characters. For example, the following configuration can be used to instrument two collection classes that are allocated by your application classes:

```
<objectAllocations>

    <allocateClass>java.util.Hashtable</allocateClass>

    <allocateClass>java.util.HashMap</allocateClass>

</objectAllocations>
```

8. The objectAllocationTimes tag specifies whether or not heap allocations should be modified so that events representing heap allocations appear in the Level 3 trace, while duration associated with heap allocations can be measured.

9. The lockAnalysis tag indicates whether or not the class should be instrumented for the Lock Analysis feature.

The default cyn.user.classes.xml file enables instrumentation for method entry and exit (level 3 tracing) for all application classes, but disables instrumentation for heap and lock analysis.

Another file is provided, with the name cyn.dev.user.classes.xml, which enables instrumentation for heap and lock analysis, as well as level 3 method entry and exit tracing.

The name of the file that is used to control instrumentation is specified by the 'userbcm.xmlfilename' property, in the appropriate bcm.properties file. By changing the value of this property, you can indicate that a different XML file be used.

Note: If the cyn.user.classes.xml or cyn.dev.user.classes.xml files are modified to include or exclude some user classes for Heap, Lock or L3 method entry and exit, WebSphere and WebLogic Application Servers will need to be recycled in order for the changes to take effect.

Setting up 3.1 Data Collector with a 3.2 Managing Server

Follow the instructions below:

1. Install 3.2 Managing Server.
2. Copy lib3.1 directory from the old 3.1 Managing Server installation directory to <AM_HOME>.
3. Restart all the Data Collectors.

Setting up Heap Analysis

The Sun JDKs have this feature disabled by default. To enable it, set internal.doheapdump=true in the Data Collector properties file. Then restart the server.

Note: Enabling this feature may have unexpected consequences to your Sun JDK server.

Adding Garbage Collection Interval Support

The Data Collector communicates with the Managing Server using TCPIP sockets and RMI. One effect of using RMI is that garbage collection occurs every minute. If you don't want this to happen, you can specify the garbage collection interval explicitly to a preferred interval by specifying the parameters in the Generic JVM arguments field. These parameters must be implemented as a pair.

1. Login to the WebSphere Admin Console.
2. Navigate as follows:
   a. Select the Servers > Application Servers and select the <ServerName>.
   b. Navigate to the Additional Properties: Process Definition > Servant > Additional Properties: Java Virtual machine.
   c. In the Generic JVM arguments field, append the following parameters if such parameters don't exist or simply update the interval values if they already exist.
      ```
      -Dsun.rmi.dgc.client.gcInterval=3600000
      -Dsun.rmi.dgc.server.gcInterval=3600000
      ```

      Note: These values require a dash (-) in front of each parameter, and a single space between parameters. Also, we recommend the interval value = or > than 3600000.

Chapter 15. Troubleshooting

Out of Memory Error

If out of memory errors occur while you are using L3 and hotspot JVM, follow the instructions below.

The default NewSize and MaxNewSize might be small for some Applications if the Application is allocating large numbers of short living objects.

Some tuning we recommend for an application that allocates many short living objects:

```
-XX:+DisableExplicitGC -XX:NewSize=128m -XX:MaxNewSize=256m -Xconcurrentio
```

Note: NewSize and MaxNewSize should be changed based on the Maximum and Minimum heap settings of the JVM.

No/partial list of servers shown during the installation

During the installation, after selecting a node if no servers show on the server selection panel, then follow the instructions below:

Click the **Back** button and without any changes click the **Next** button again. If you still don't see the all servers then select one of the servers and add it and then remove it again.

Chapter 16. Uninstalling the Distributed Data Collector

These instructions describe how to disable and uninstall the Data Collector. The instructions vary based on the Application Server and platform.

Disable

The following instructions describe how to disable the Data Collector.

Disabling Data Collectors for WebSphere

Follow the instructions appropriate for the platform on which you would like to disable the Data Collectors for WebSphere.

To disable the Data Collector for WebSphere on AIX, Solaris, Linux, HP-UX or Windows:

1. Prior to starting the disable process, **stop the Data Collector.**
2. Open the WebSphere Administrative Console.
3. Click the **+** sign until you ungroup the Application Servers directory.
4. Select the server where the Administrator installed the Data Collector.
5. For WAS 5.x, select Custom Services and highlight AM Custom Services. For WAS 6.x, go to Server Infrastructure > Administration > Custom Services and highlight AM Custom Services.
6. Click **Edit**.
7. Uncheck the Enabled box or change the server startup value to False.
8. Click **OK** and click **Apply**.
9. For WebSphere 5.x, go back to Process Definition > Java Virtual Machine. For WebSphere 6.x, go back to Server Infrastructure > Process Definition > Java Virtual Machine.
10. In the Generic JVM Arguments field remove:

    `-Xrunam`
11. Click **OK** and click **Apply**.

To remove associated files:

1. Go to the WebSphere installation directory:
2. Go JVM Advance properties.
3. Remove -xbootclasspath.
4. Start WebSphere.

Disabling Data Collectors for WebLogic

Perform these instructions to disable the Data Collector for WebLogic.

To disable the Data Collector for WebLogic:

1. In the WebLogic startup script (if you are using standalone server) or in server > remote start > arguments (if you are using network deployment) remove the following argument:

    `-Xrunam`
2. In current.env, comment out or remove the JAVA_OPTIONS parameters.

3. Restart the control region.
4. Restart the WebLogic server.

Uninstalling the Data Collectors

Perform these instructions to uninstall the Data Collector.

To uninstall the Data Collector:

1. Disable the Data Collector, as described in "Disabling Data Collectors for WebSphere" on page 123 or "Disabling Data Collectors for WebLogic" on page 123.
2. Remove the installed files.
3. Undo the WebSphere configuration changes as described in Appendix D.

Note: For WebSphere, run the script restoreConfig.sh/restoreConfig.bat located in the bin directory and pass backup config file (located in <AM_HOME>/logs/ibm_am_installer_dc) as an argument. This will restore the original configuration. For WebLogic, replace config.xml file with a backup config file (located in <AM_HOME>/logs/ibm_am_installer_dc).

Note: No backup is done for remote network deployment.

Part 5. Appendixes

Appendix A. IBM Tivoli Enterprise Console Integration

Overview

The Application Monitor for Tivoli Enterprise Console® is the integration of the Application Monitor services with Tivoli Enterprise Console 3.8.

Requirements for Integrating with Tivoli Enterprise Console

The Application Monitor supports the following Tivoli® server platforms:
- Microsoft® Windows Server
- Sun Solaris
- IBM AIX
- HP-UX

The following Tivoli software is required:
- Tivoli Framework 3.7.1 or greater
- Tivoli Enterprise Console Server 3.8
- Tivoli Enterprise Console UI Server 3.8
- Tivoli Enterprise Console Console 3.8

One of the following Tivoli software components are required:
- Tivoli Enterprise Console 3.8 non-TME® SNMP Adapter
- Tivoli Enterprise Console 3.8 Adapter Configuration Facility

You should identify one system as the SNMP Adapter host, which accepts SNMP traps from the Application Monitor, adapts them to Tivoli Enterprise Console Events and forwards them to a Tivoli Enterprise Console Server. The supported platforms for the SNMP Adapter host are the same as for the Tivoli server. To avoid interference, it is recommended that the system running the SNMP Adapter not run any other SNMP agent on the same UDP port.

Configuring Tivoli Enterprise Console

Summary

The Application Monitor for Tivoli Enterprise Console provides configurations for Tivoli Enterprise Console Server, Tivoli Enterprise Console, and Tivoli Enterprise Console SNMP Adapter that allow alerts from the Application Monitor to appear in the Tivoli Enterprise Console console.

The Application Monitor for Tivoli Enterprise Console is available as a CD-ROM under the directory TivoliIntegration/tec. Copy the files to location(s) accessible by the Tivoli Enterprise Console server, one Tivoli Enterprise Console console and SNMP Adapter host.

Configuring the Tivoli Enterprise Console Server

The Application Monitor events are described for Tivoli Enterprise Console in am.baroc. To install this file, open a command prompt or shell with Tivoli paths

and environment set, change directories to the Application Monitor for Tivoli Enterprise Console media, and type the following:

```
sh am_setup_tec.sh SourceRuleBaseName NewRuleBaseName NewRuleBasePath
```

SourceRuleBaseName is the name of your current rule base. For new installations of Tivoli Enterprise Console, this is named "Default."

NewRuleBaseName is the name of a new rule base to create. "AM" is recommended.

NewRuleBasePath is the name of a new directory where the rule base will be stored. An example is "/usr/tec/am." Windows users: be sure to use forward slashes in pathnames.

Upon successful completion, the am rulebase will accept the Application Monitor events.

Configuring the Tivoli Enterprise Console Console

The Application Monitor for Tivoli Enterprise Console includes a configuration file that can be imported into the Tivoli Enterprise Console console to define the Application Monitor event group and filter.

1. Open the Tivoli Enterprise Console, login as required.
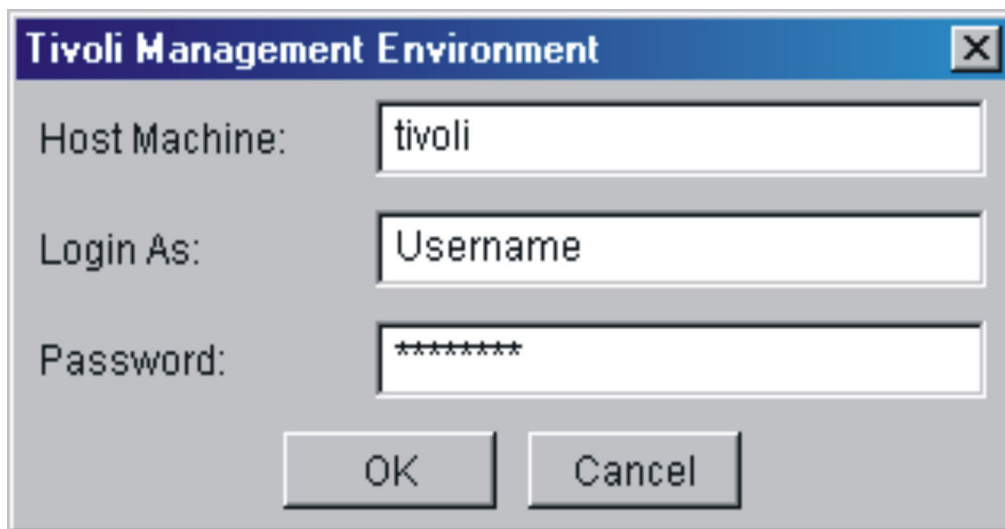
Figure 3. Login

2. Select **Windows > Configuration**.
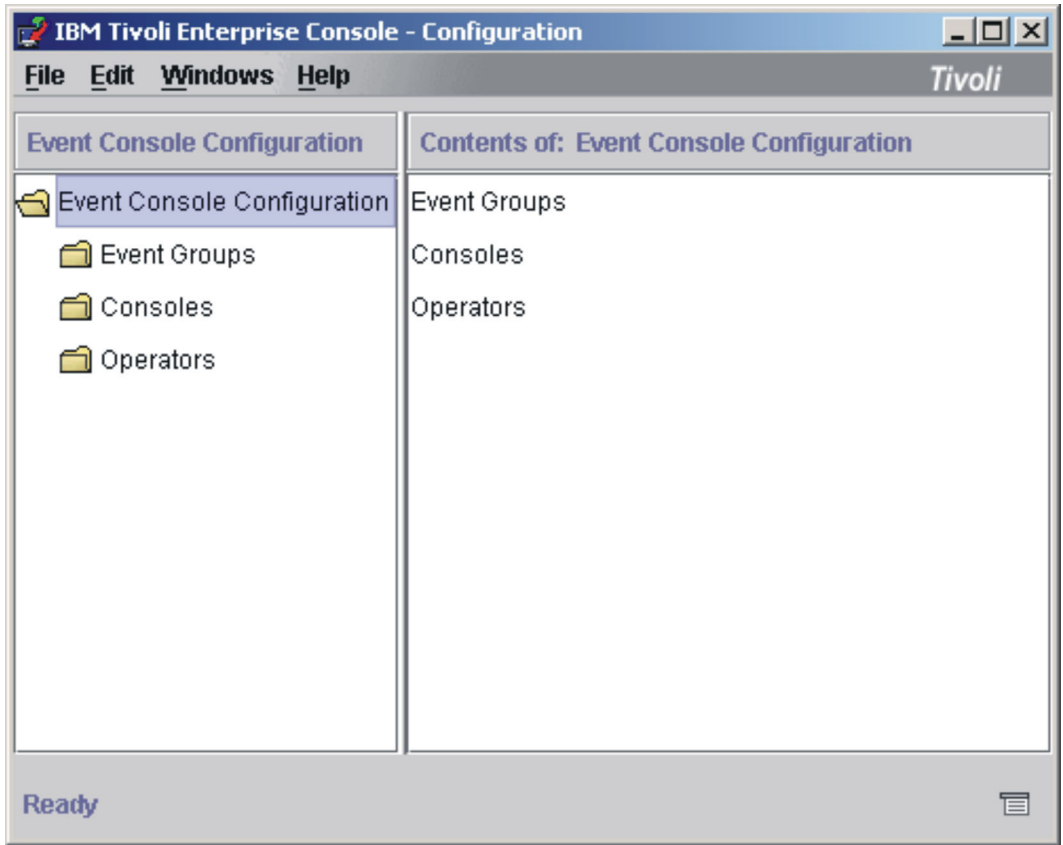
Figure 4. Configuration

3. Select **File > Import**.
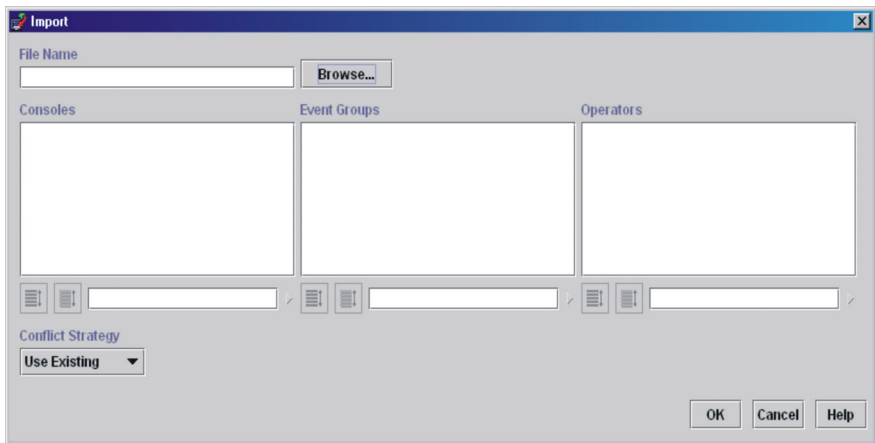
Figure 5. Import

4. Click **Browse** to select the file am_event_group.cfg.
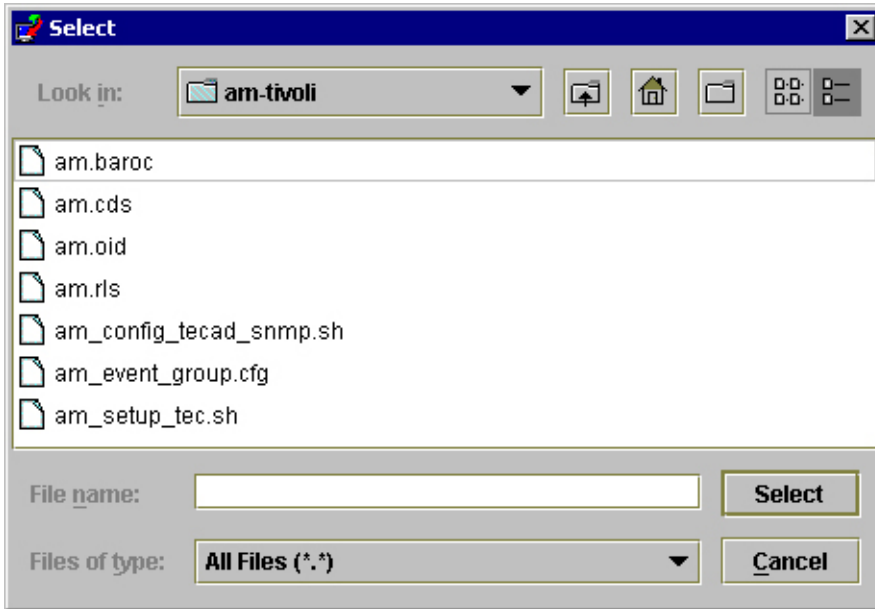
Figure 6. Select

> 5. Click **Select**.
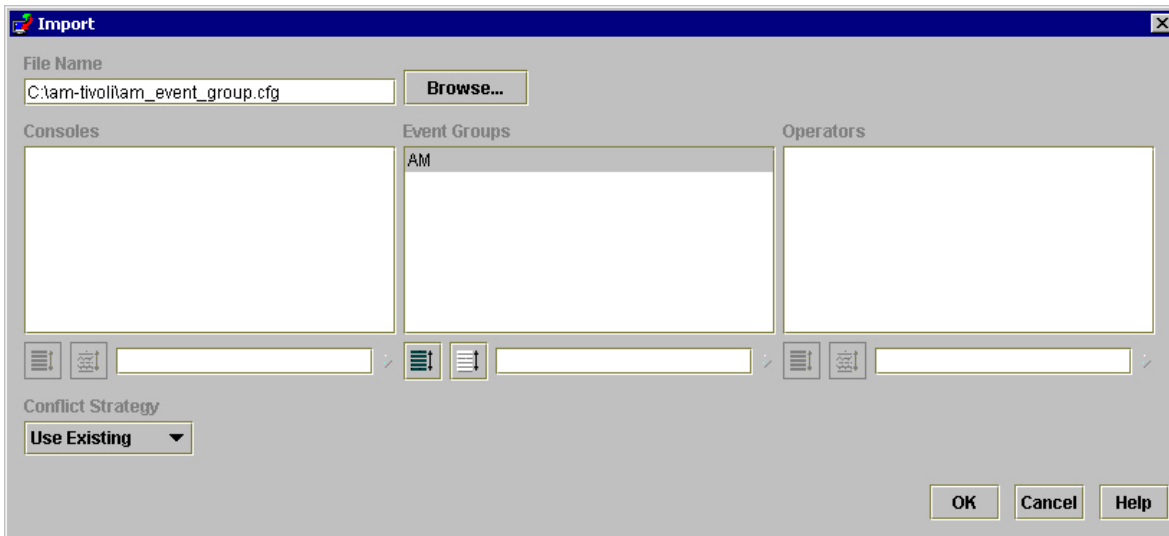
Figure 7. Import

> 6. Select AM in the center pane and click **OK**.
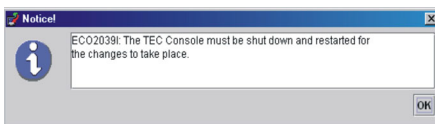
Figure 8. Notice

> 7. Click **OK** and restart the Tivoli Enterprise Console.
> 8. Click on **Event Groups** to see the new AM Event Group.
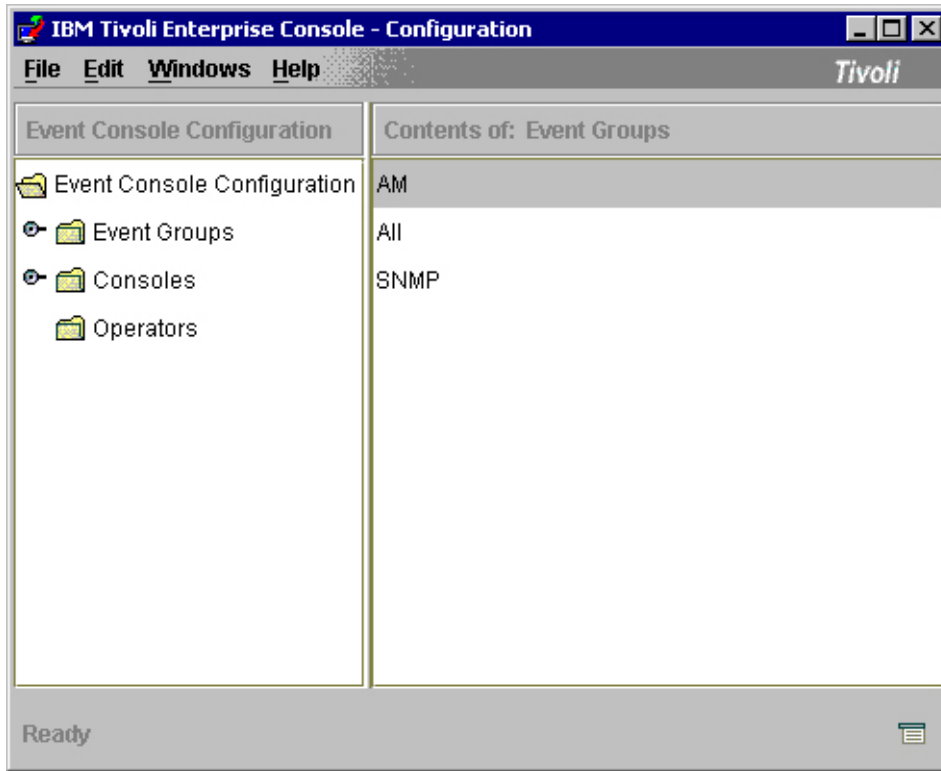
Figure 9. IBM Tivoli Enterprise Console Configuration

9. To use the AM event group, assign it to a console. See Tivoli Enterprise Console User's Guide for instructions. The operators for that console will now see AM in their summary chart view and event viewer.
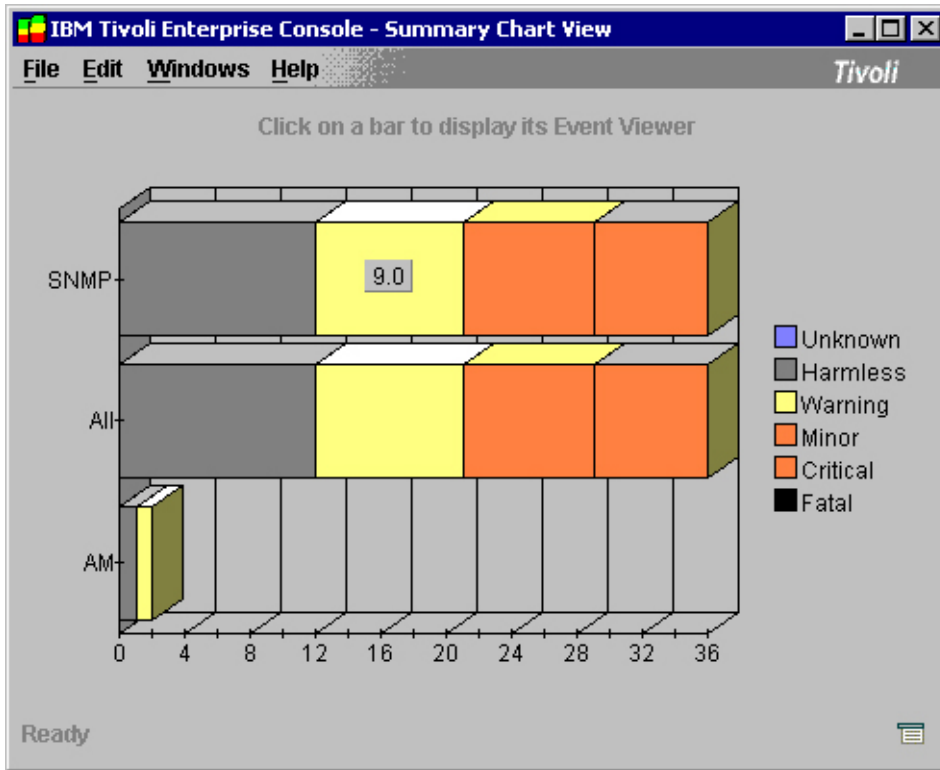
Figure 10. IBM Tivoli Enterprise Console

Figure 11. Event Viewer

10. Tivoli Enterprise Console is now configured.

Installing and Configuring the Tivoli Enterprise Console SNMP Adapter

As noted in the Requirements section, there are two choices for Tivoli Enterprise Console SNMP Adapter: non-TME and Adapter Configuration Facility (ACF) versions. The non-TME version is a standalone installation, and the ACF version can be deployed remotely using the Tivoli Desktop. The following sections describe the steps required for each. Do not install both on the same system, as conflicts can occur.

Installing and Configuring Tivoli Enterprise Console SNMP Adapter for non-TME

Instructions for installing the non-TME version are found in the Tivoli Enterprise Console Adapters Guide, see the following website http://publib.boulder.ibm.com/infocenter/tiv3help/index.jsp?toc= /com.ibm.itec.doc_3.9/toc.xml. Follow Tivoli's instructions to install the non-TME SNMP Adapter on any of the supported platforms.

To configure, open a command prompt or shell, change the current directory to the location of the Application Monitor for Tivoli Enterprise Console files, and type the following:

```
sh am_config_tecad_snmp.sh pathname
```

Pathname is optional. It specifies the directory name containing the SNMP Adapter. The script will look in a few default locations, and exit with a warning message if the Adapter files and directory cannot be found.

Note this script will only work on UNIX systems and Windows systems with a Bourne shell prompt (such as Tivoli managed node). If you are configuring a Windows system without access to a Bourne shell, do the following steps from a command prompt:

```
net stop TECSNMPAdapter

copy am.cds c:\tecsnmp\etc
copy am.oid c:\tecsnmp\etc
c:
cd \tecsnmp\etc
copy tecad_snmp.cds+am.cds
copy tecad_snmp.oid+am.oid
net start TECSNMPAdapter
```

Installing and Configuring the Tivoli Enterprise Console SNMP Adapter for ACF

Screen by screen instructions for deploying and configuring a new ACF adapter are shown. These instructions assume that the adapter will only support the Application Monitor traps and events. Support for other traps requires manually appending the tecad_snmp.cds and tecad_snmp.oid files (not shown).

How to deploy the Application Monitor SNMP Adapter configuration and Tivoli Enterprise Console SNMP Adapter using Tivoli Enterprise Console Adapter Configuration Facility:

Dependencies: Framework 3.7.1 or greater, endpoint, Tivoli Enterprise Console 3.8, Tivoli Enterprise Console ACF 3.8 installed.

1. Click **Create > Region**.

Figure 12. Create Region

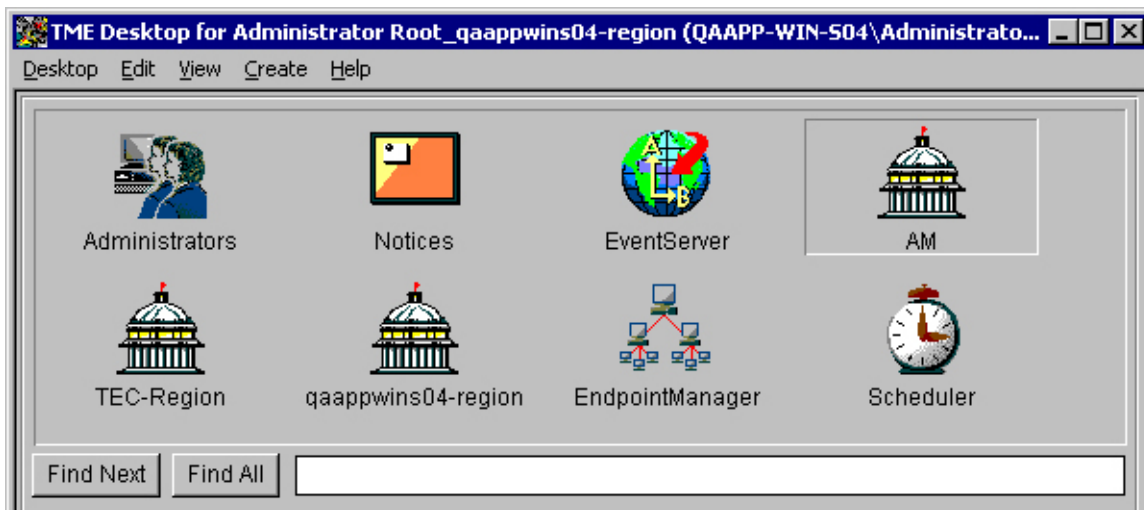2. Enter a name for the Policy Region, and click **Create & Close**.

Figure 13. TME Desktop for Administrator Root

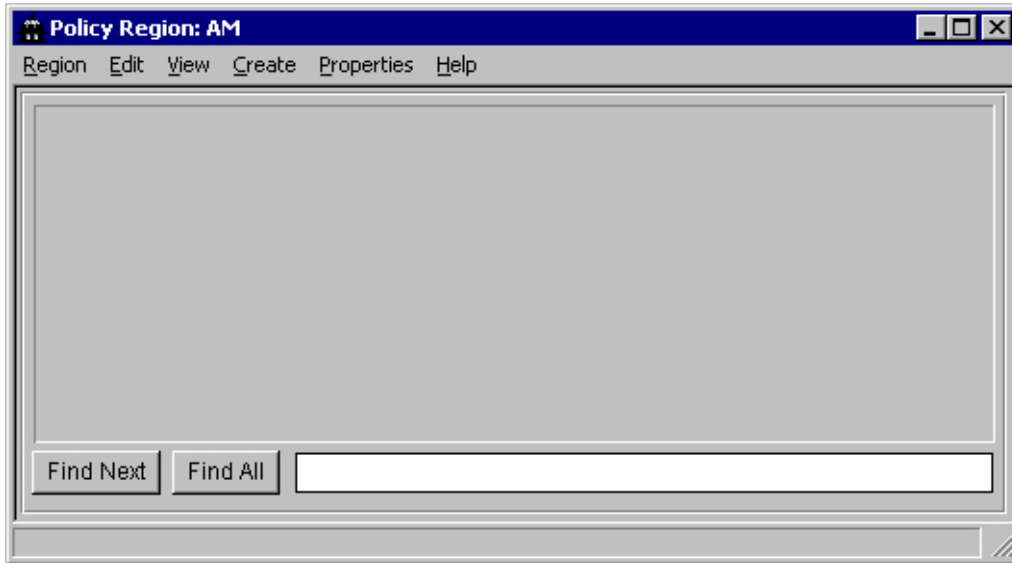3. Double-click on the Policy Region to open it.

Figure 14. Policy Region AM

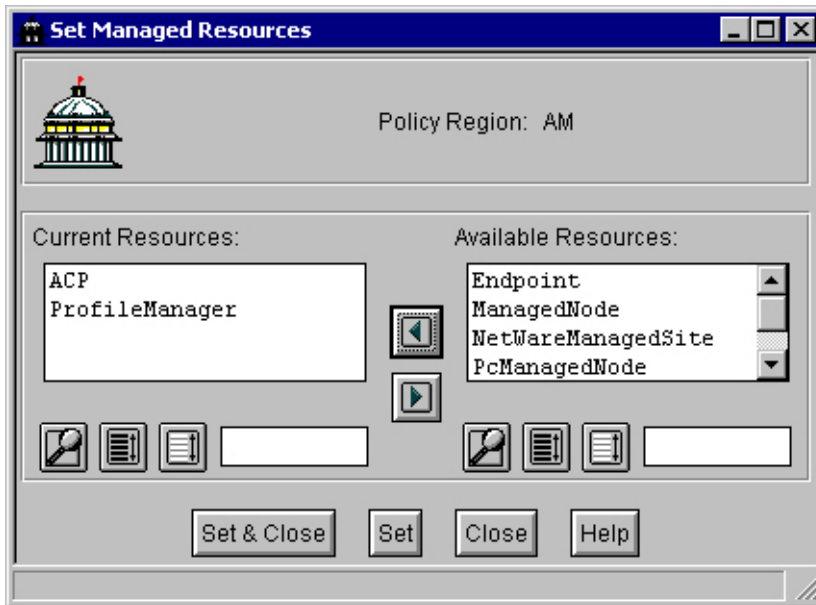4. Select **Properties > Managed Resources**.

Figure 15. Set Managed Resources

5. Move ACP and ProfileManager to the left-hand side and click **Set & Close**.
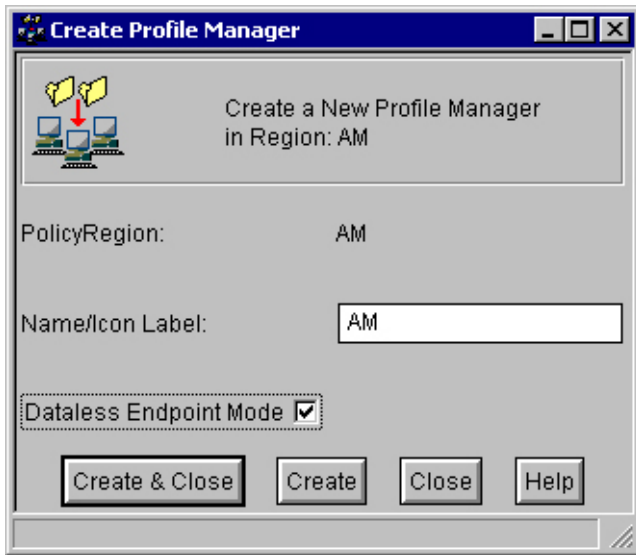6. Select **Create > ProfileManager**.

Figure 16. Create Profile Manager

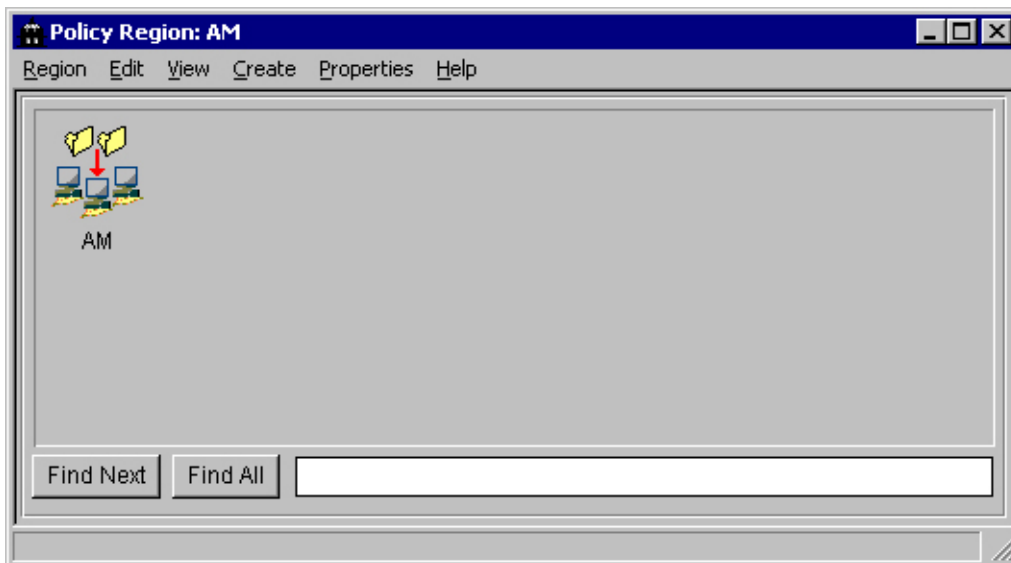7. Enter a name, and click the Dataless Endpoint Mode checkbox. Click **Create & Close**.

Figure 17. Policy Region AM

8. Double-click to open the Profile.

Figure 18. Profile Manager

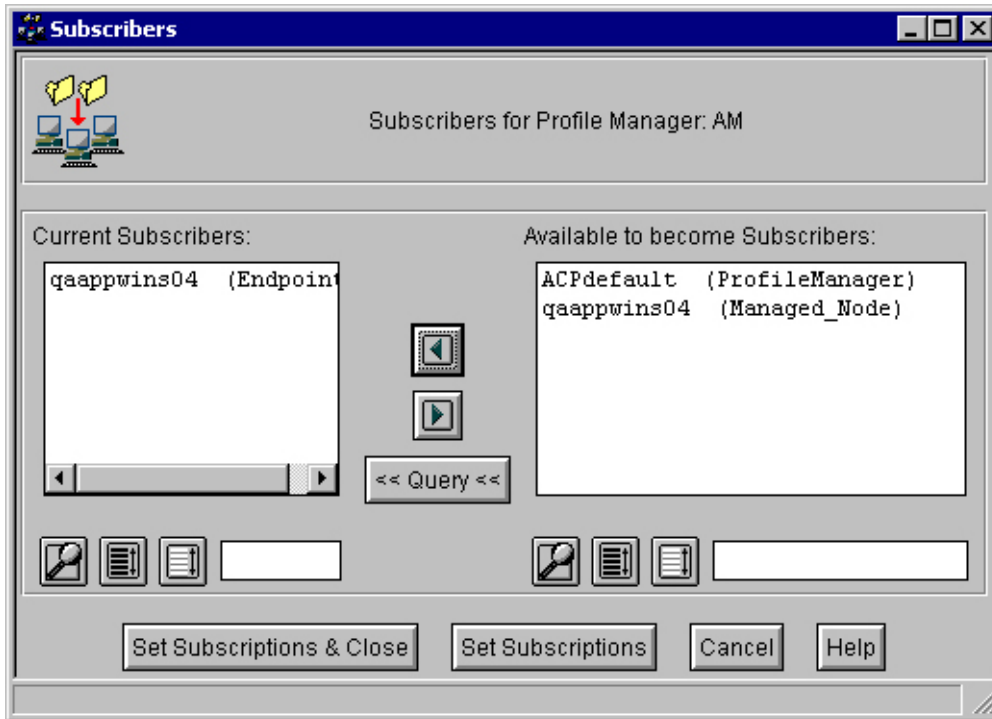9. Select **Profiles > Subscribers**.

Figure 19. Subscribers

10. Move the desired endpoint (to receive the SNMP adapter) to the left-hand side and click **Set Subscriptions & Close**.

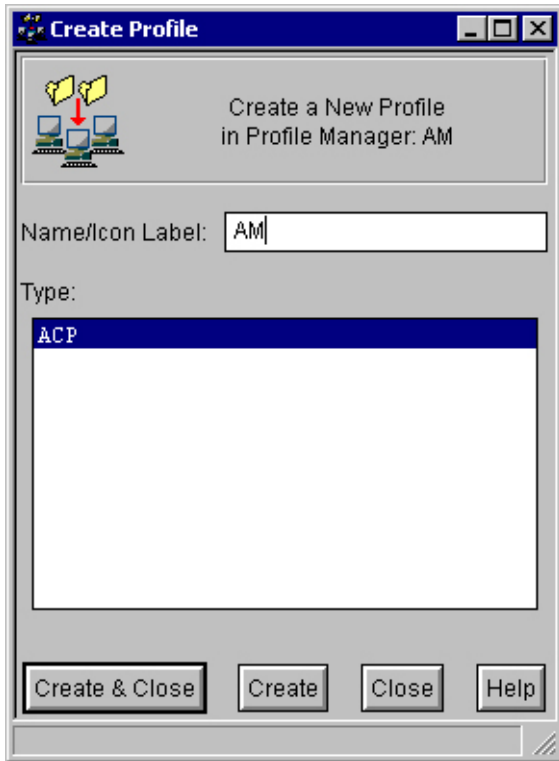*Figure 20. Profile Manager*

       11. Select **Create > Profile**.

Figure 21. Create Profile

12. Enter a name, select ACP, and click **Create & Close**.

Figure 22. Profile Manager

13. Double-click to open the profile.
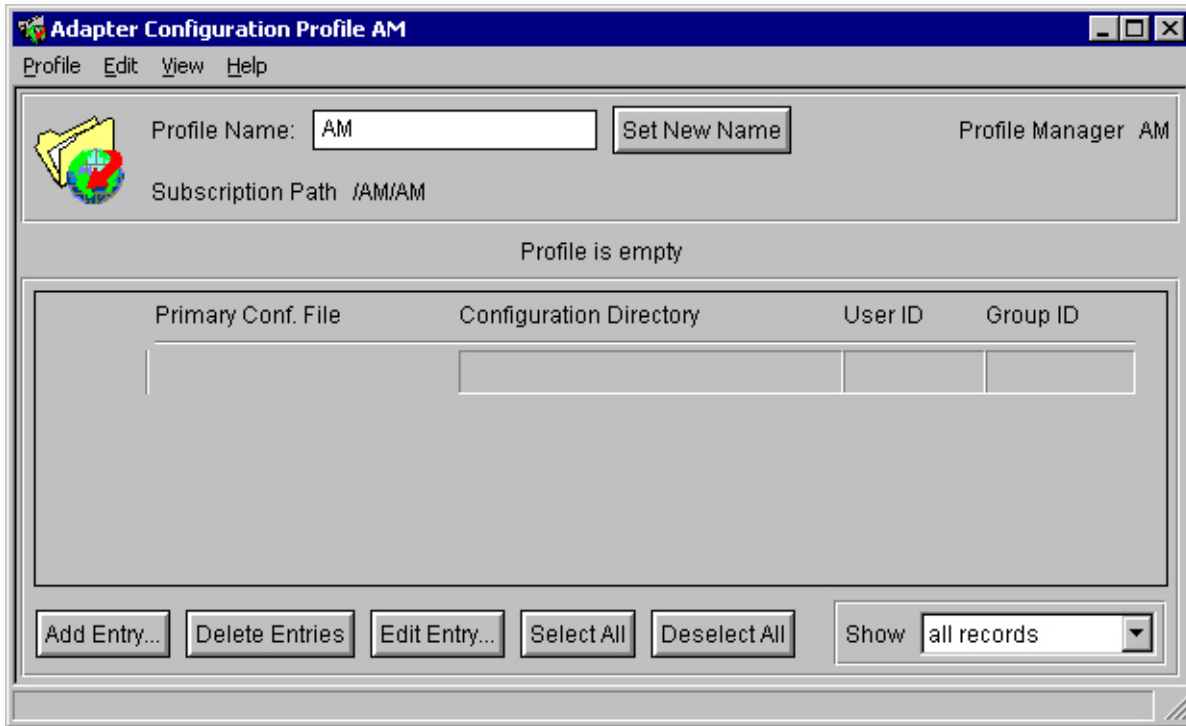
Figure 23. Adapter Configuration Profile

14. Click **Add Entry**.
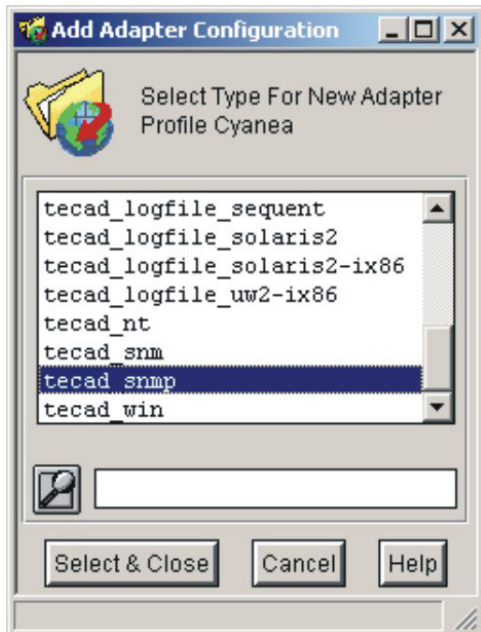
Figure 24. Add Adapter Configuration

15. Scroll down, select tecad_snmp, and click **Select & Close**.
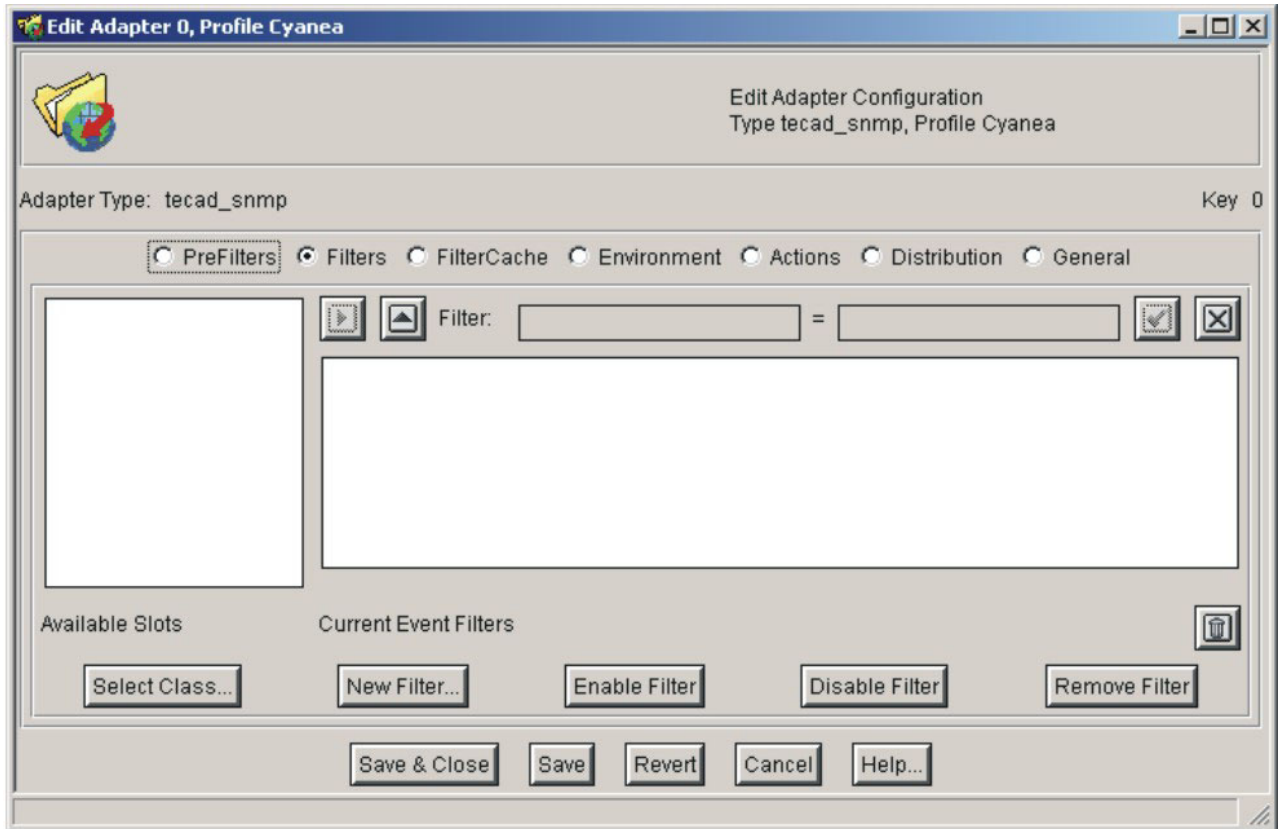
Figure 25. Edit Adapter

16. Select **Environment**.

Figure 26. Edit Adapter

17. Double-click on ServerPort in the left-hand pane. Enter the desired Tivoli Enterprise Console port number (usually 5529 for Windows Tivoli Enterprise Console Server, or 0 for a UNIX Tivoli Enterprise Console Server), and click the checkmark button to accept the change. The entry will display in the right-hand pane.

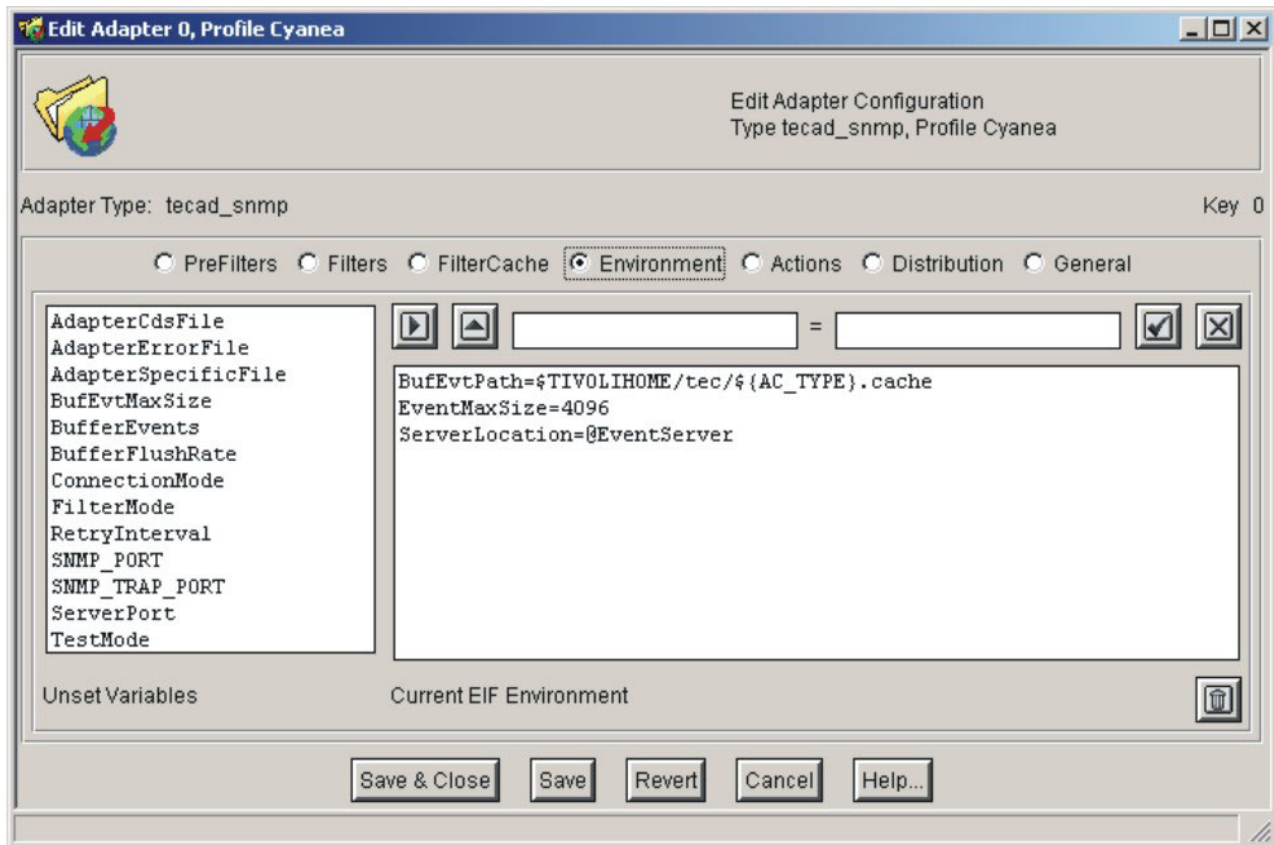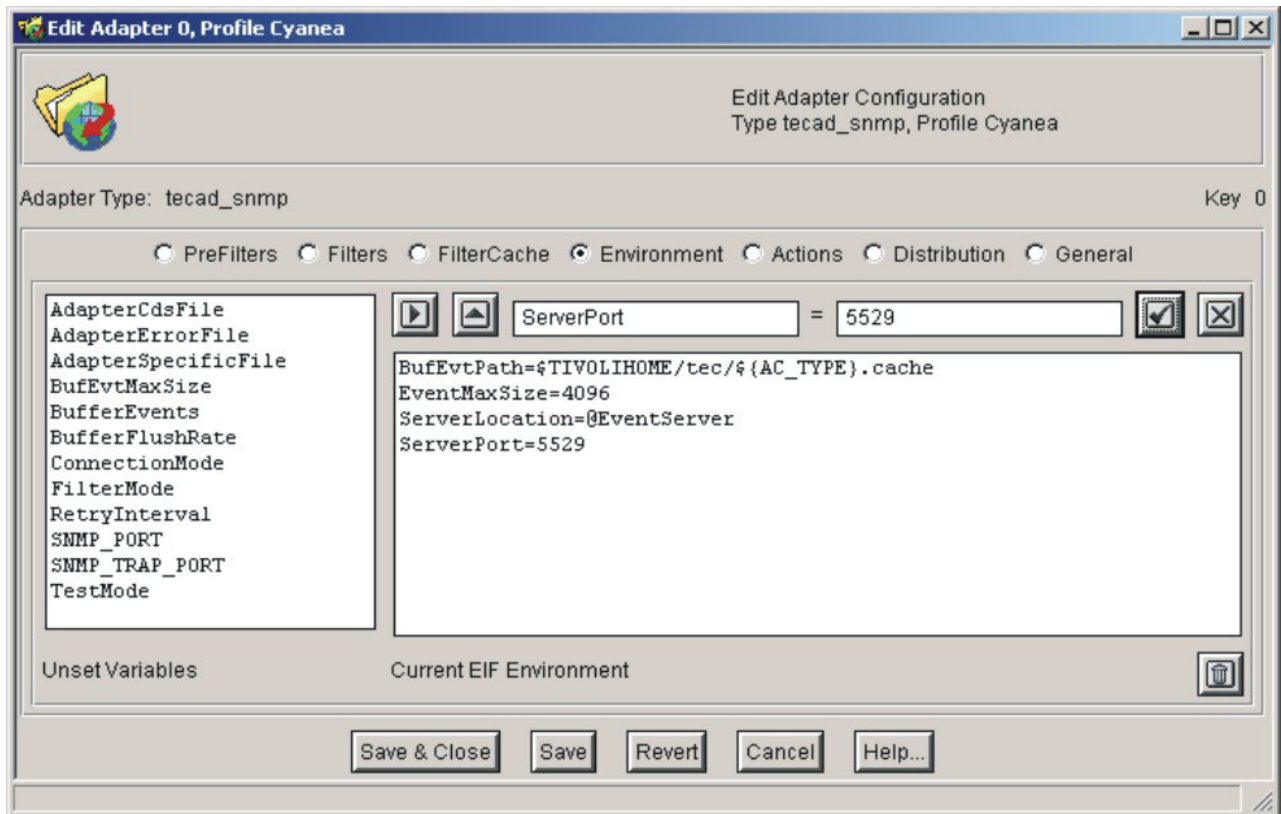*Figure 27. Edit Adapter*

18. Select **Distribution**.
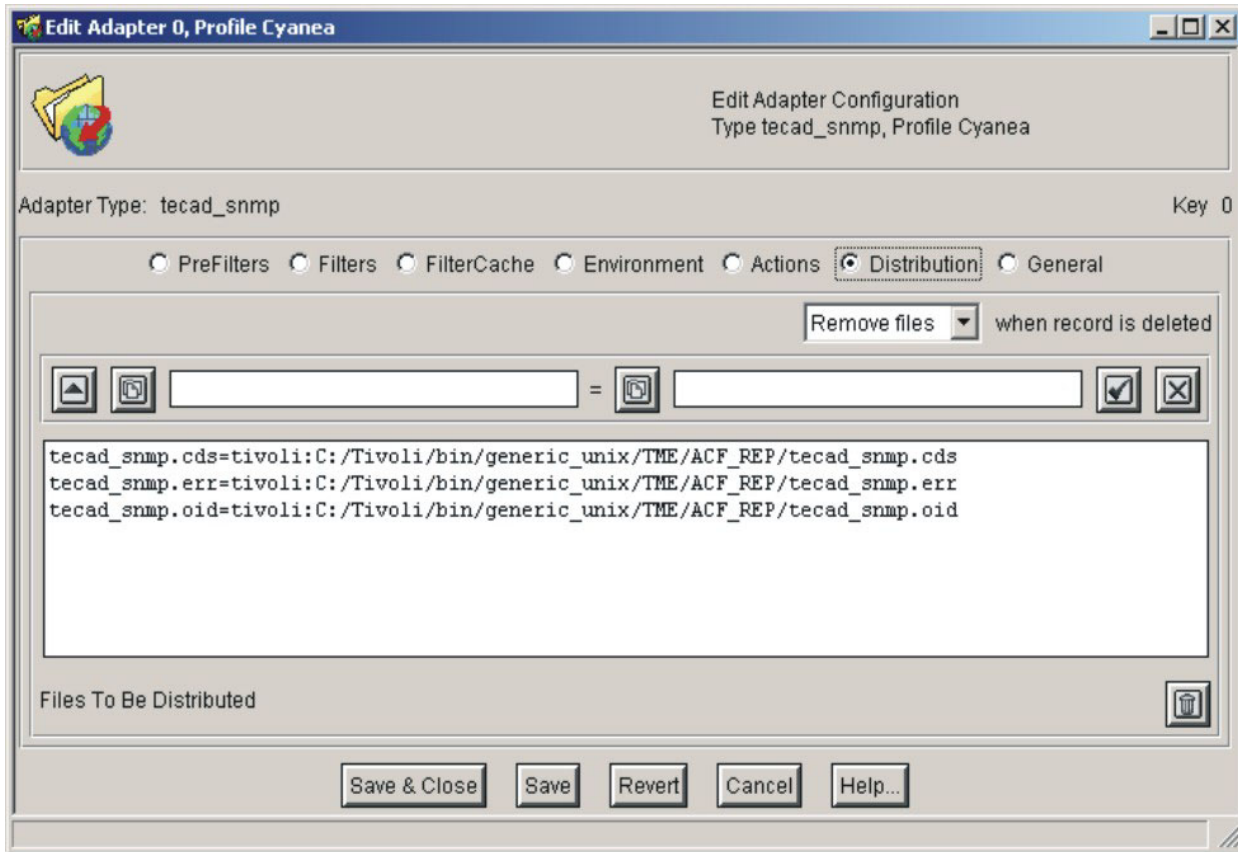
Figure 28. Edit Adapter

19. The .cds file and .oid file should be changed to include the am traps. There are two choices:

    - Support both the Application Monitor traps and standard traps. You must manually append the Tivoli supplied files with the Application Monitor files. They are ASCII, so use your favorite editor and/or command line tools. Then follow the directions below.

    - Replace with the Application Monitor files, to only support the Application Monitor traps. Follow the directions as listed below.

20. Double-click on the tecad_snmp.cds entry.
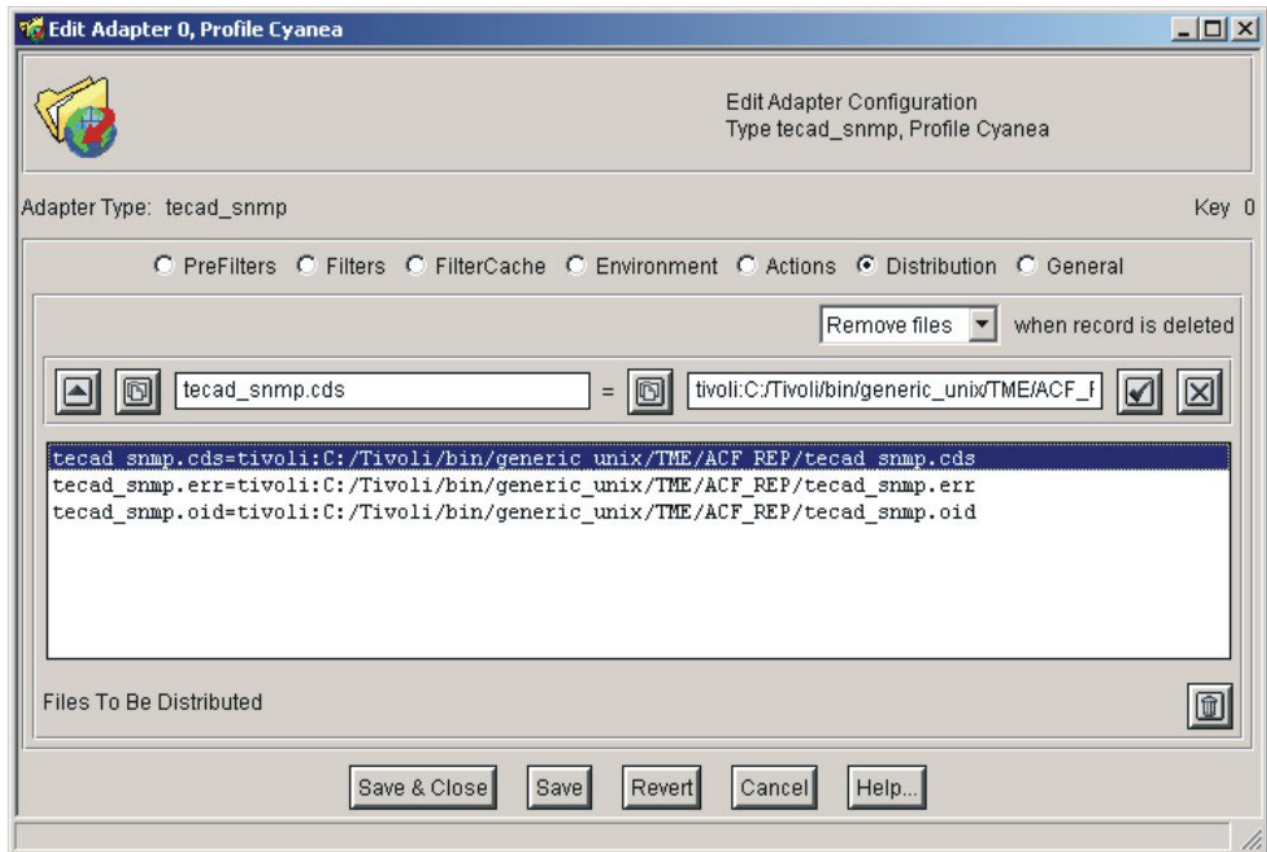
Figure 29. Edit Adapter

21. Click on the **Browse** button associated with the right-hand pathname.
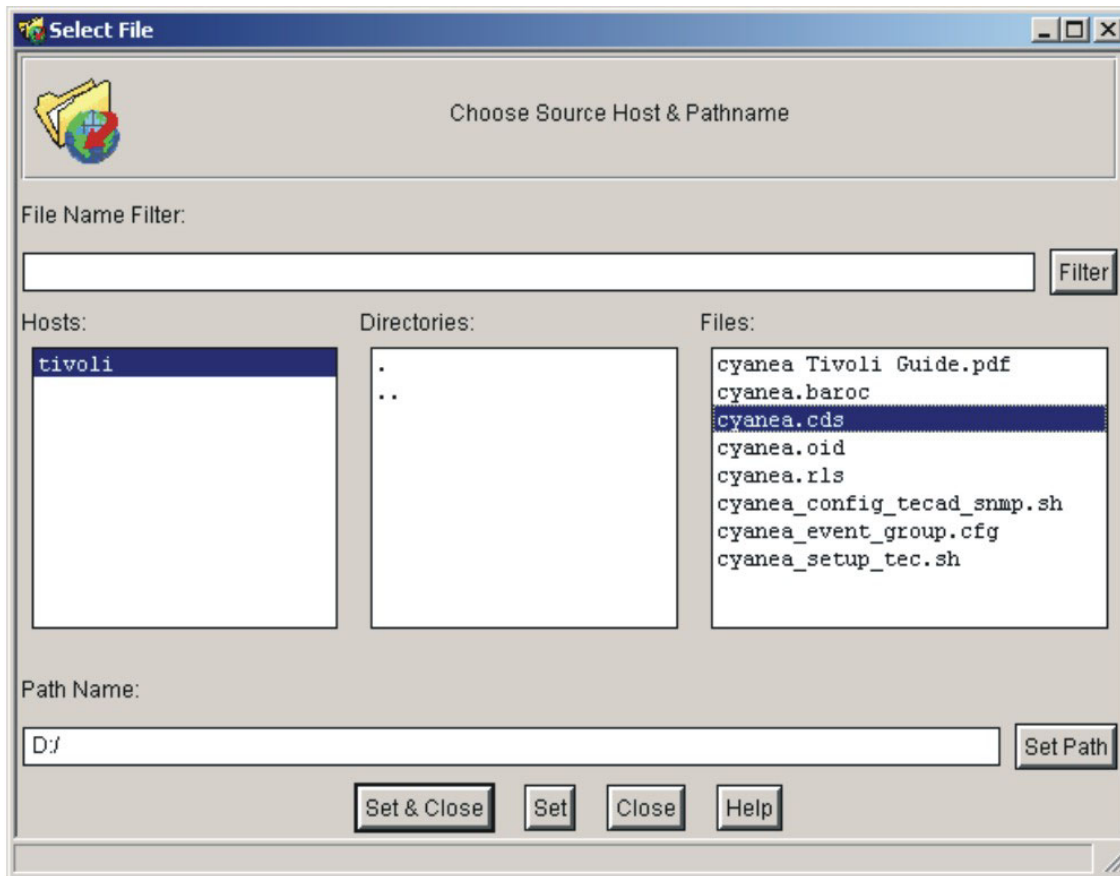
Figure 30. Select File

22. Browse to the location of am.cds. Select the file, and click **Set & Close**.
23. Click the checkmark button to accept the change, as shown in the lower pane.
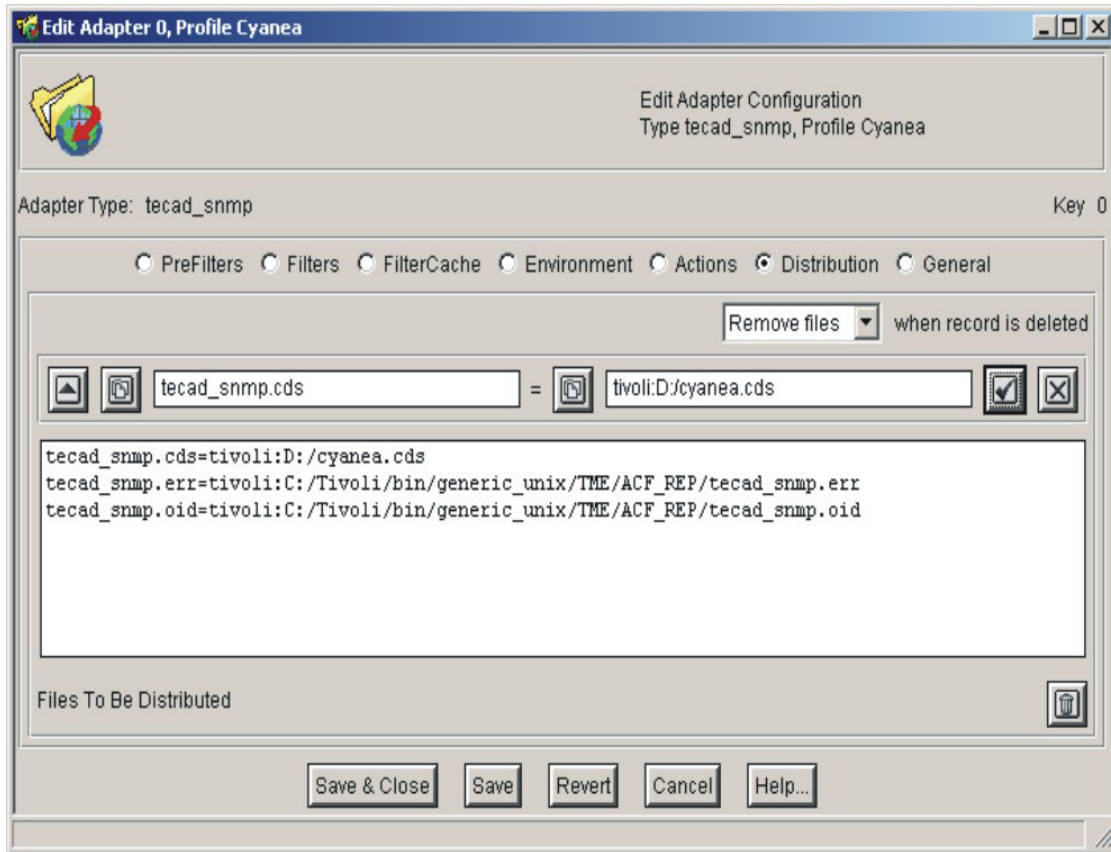
Figure 31. Edit Adapter

24. Repeat the steps to change the right-hand value of tecad_snmp.oid to point to am.oid.
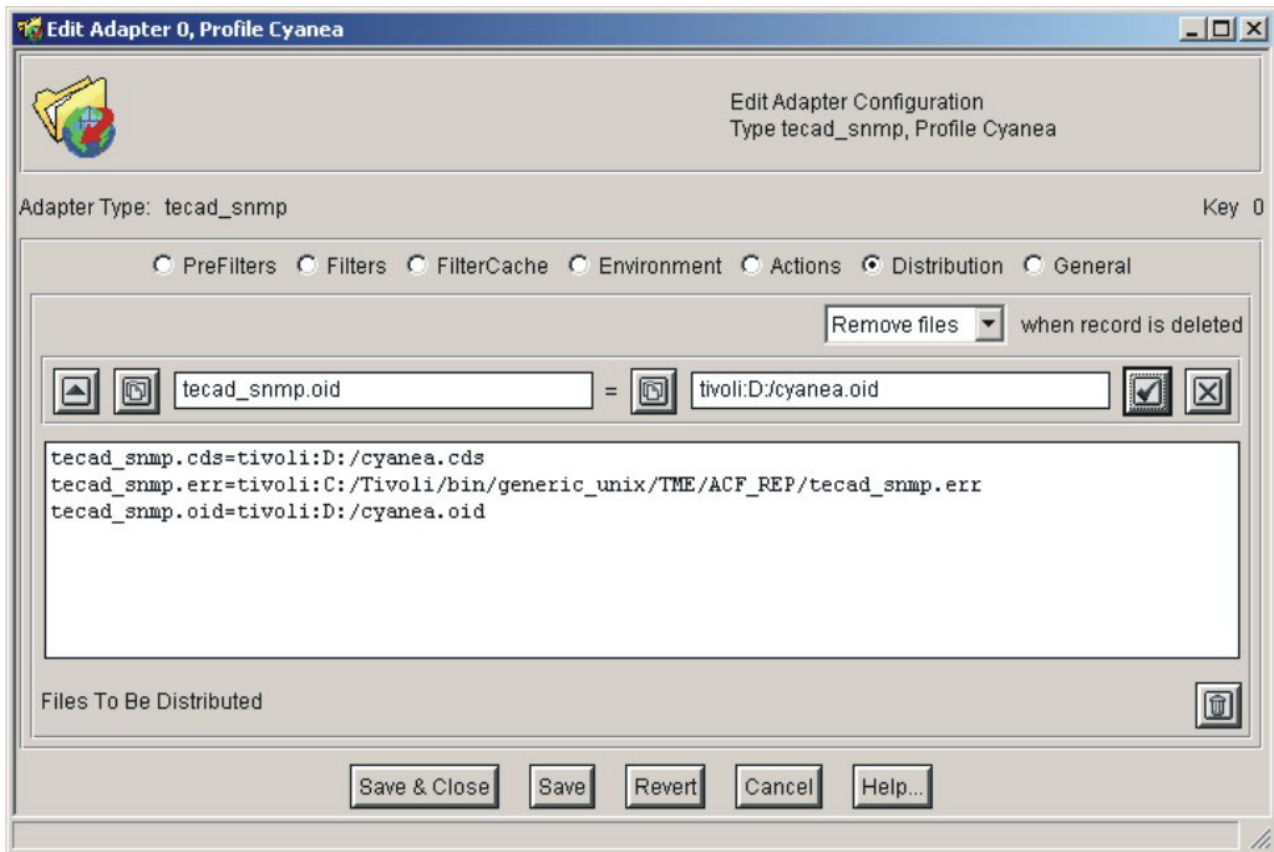
Figure 32. Edit Adapter

25. Click **Save & Close**.
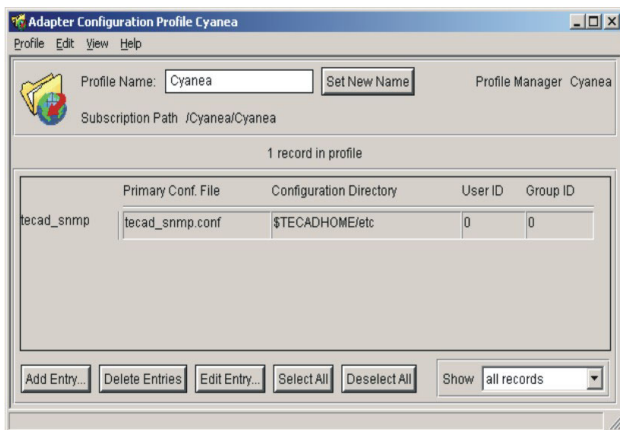
Figure 33. Adapter Configuration Profile

26. Close the profile.
27. Distribute the profile (ex. drag the profile on top of the endpoint.) The main window of the desktop shows a log of actions.
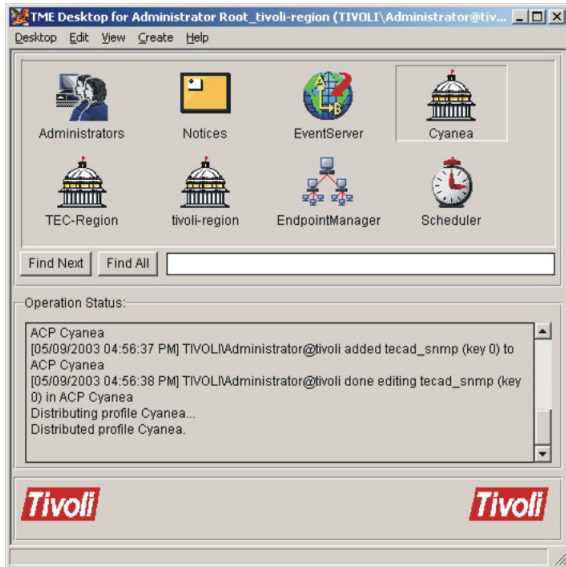
Figure 34. TME Desktop for Administrator Root_Tivoli-region

28. The adapter is configured, distributed, and running.

Using the Application Monitor for Tivoli Enterprise Console

Configure the Application Monitor agent to send SNMP traps to the configured Application Monitor SNMP Adapter host, and the Application Monitor events will show up in the Tivoli Enterprise Console.
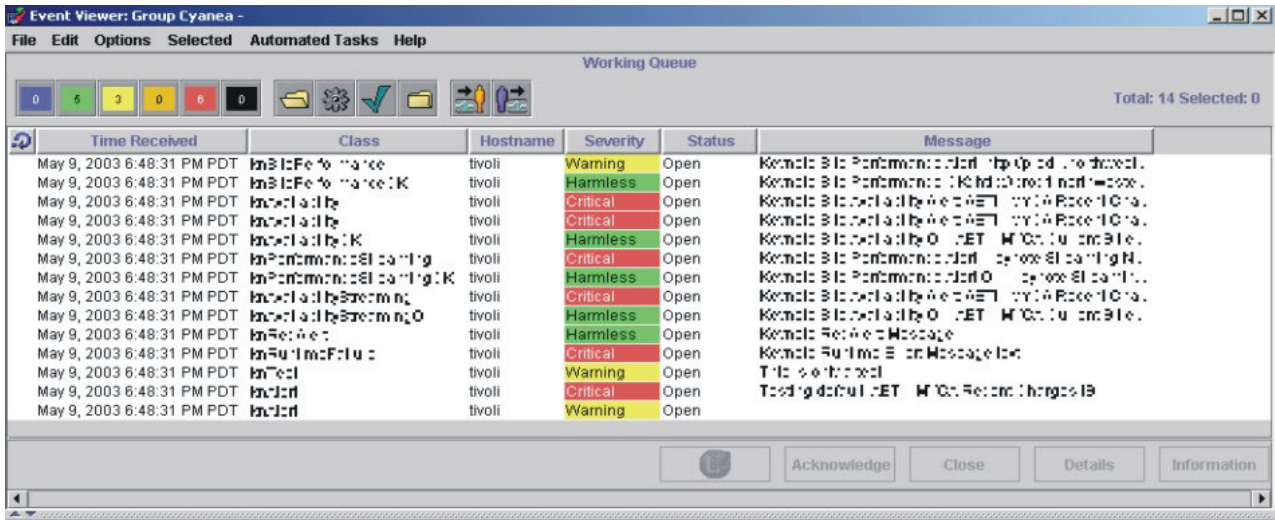
Figure 35. Event Viewer

Click on an event and choose Details for more information.

Appendix B. BMC Patrol Integration

Overview

The Application Monitor for Patrol Enterprise Manager is the integration of the Application Monitor services with BMC's Patrol Enterprise Manager (Patrol EM). The Application Monitor for Patrol EM consists of two components: a customized Patrol EM filter (AM.afltr) and an application that receives AM SNMP traps (AMSNMPAdapter).

Requirements

The following BMC server platforms are supported by the Application Monitor:
- Sun Solaris
- IBM AIX
- HP-UX

The following BMC Patrol EM software is required:
- Patrol Enterprise Manager 4.2 or later

The following Patrol EM software is required:
- Multi-Listener - PEM TCP/IP multi-listener daemon

One system should be identified as the AM SNMP Adapter host, to accept the Application Monitor SNMP traps, adapt them to Patrol EM Events and forward them to a Patrol EM Server. The supported platforms for this system are:
- Windows 2000
- Sun Solaris
- IBM AIX
- HP-UX

  For the recommended configuration, this system should no be running any other SNMP agent on UDP port 162 that would interfere with running the AM SNMP Adapter. This system should also have the Java™ runtime version 1.3 (JRE 1.3) or later installed.

Configuring BMC Patrol

The Application Monitor for Patrol Enterprise Manager provides a customized filter for Patrol EM and the AM SNMP Adapter to have alerts from the Application Monitor appear in the Patrol EM Active Alert Display.

The Application Monitor for Patrol Enterprise Manager is available from IBM on CD-ROM, or as am.tar, or am.zip. The Application Monitor for Patrol EM consists of the following files:
- amfilter.tar
- AMTrapReceiver.jar
- am.conf
- amSnmpAdapter.sh (for Unix systems)
- amSnmpAdapter.bat (for Windows systems)

Once these files have been extracted from the CD, tar file, or zip file, copy the files to location(s) accessible by the Patrol EM server and the AM SNMP Adapter host.

Configuring Patrol EM Server

The AM events are described for Patrol EM in the filter file AM.afltr. Installing and configuring this filter consists of the following steps:

- Generating the AM filter engine
- Defining the AM filter path

The Multi-Listener - PEM TCP/IP multi-listener daemon must be installed and configured before executing the following steps. Follow the instructions provided in the Multi-Listener documentation to specify a socket number that the filter path will be monitoring.

Generating the AM Filter Engine

1. Login to the Patrol EM server as user NetCmmnd.
2. Extract the contents of the file amfilter.tar:
   ```
   tar xvf amfilter.tar
   ```
3. Using the Patrol M Console, generate the AM filter engine.
4. Select **Customization > ALFE**.
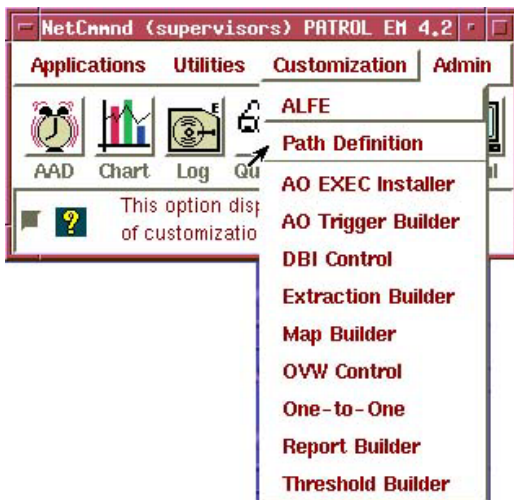
Figure 36. Path Definition

5. Select **NetCmmnd.fltr**.
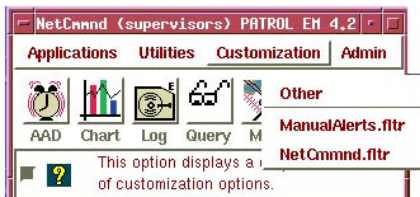
Figure 37. Select Filter

6. The ALFE dialog window displays with the NetCmmnd filter loaded.
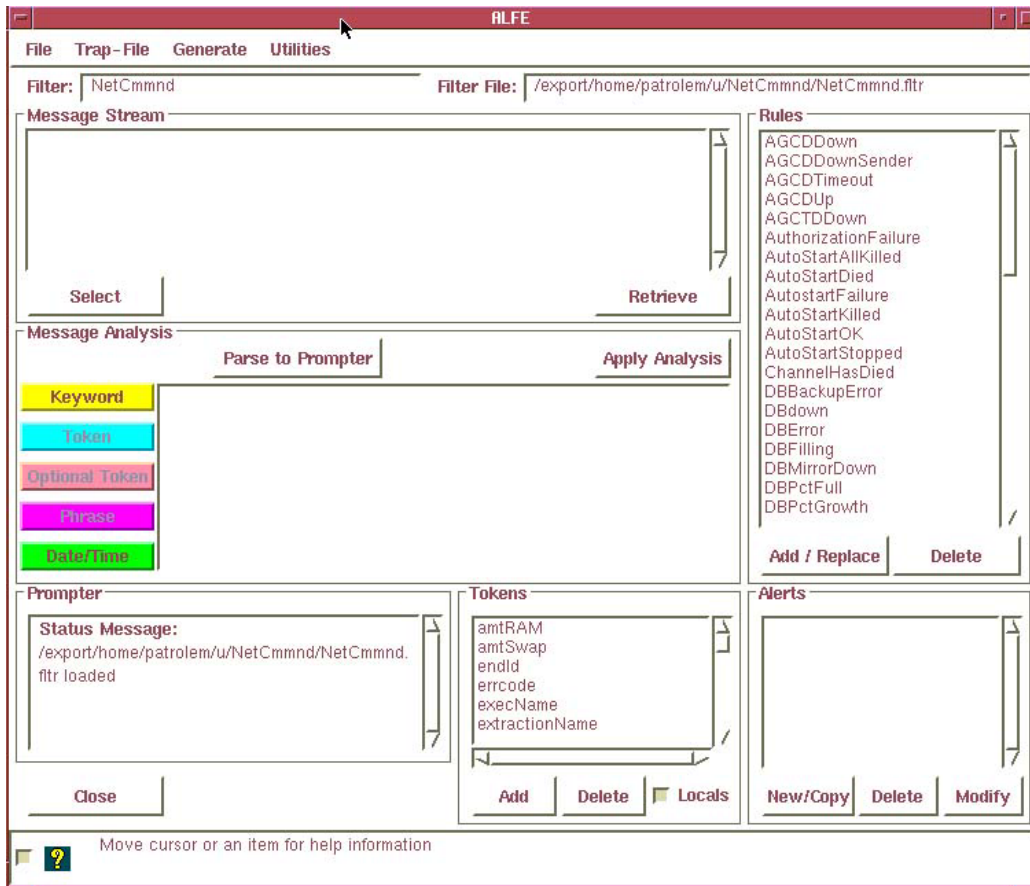
Figure 38. ALFE Netcmmnd

7. Select **File > Load Text Filter**, then select **AM.afltr**.
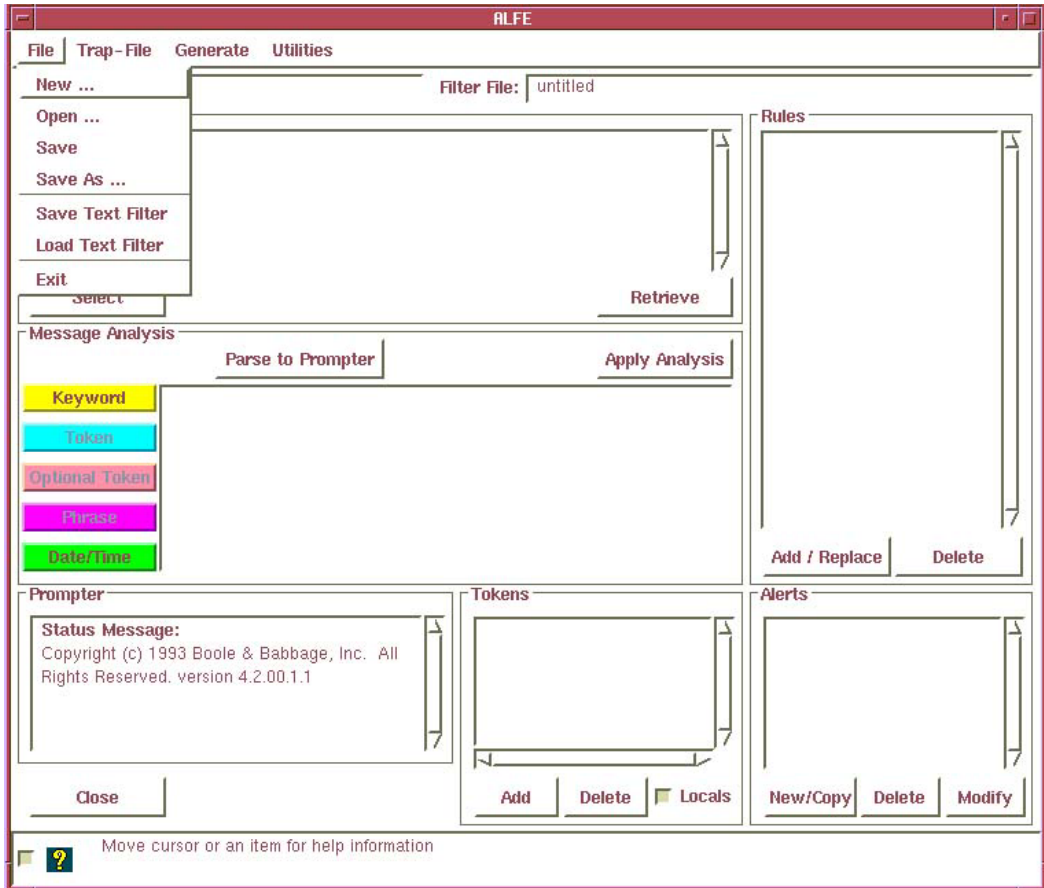
Figure 39. Select Load Text Filter

8. The ALFE dialog window displays with the AM filter loaded.
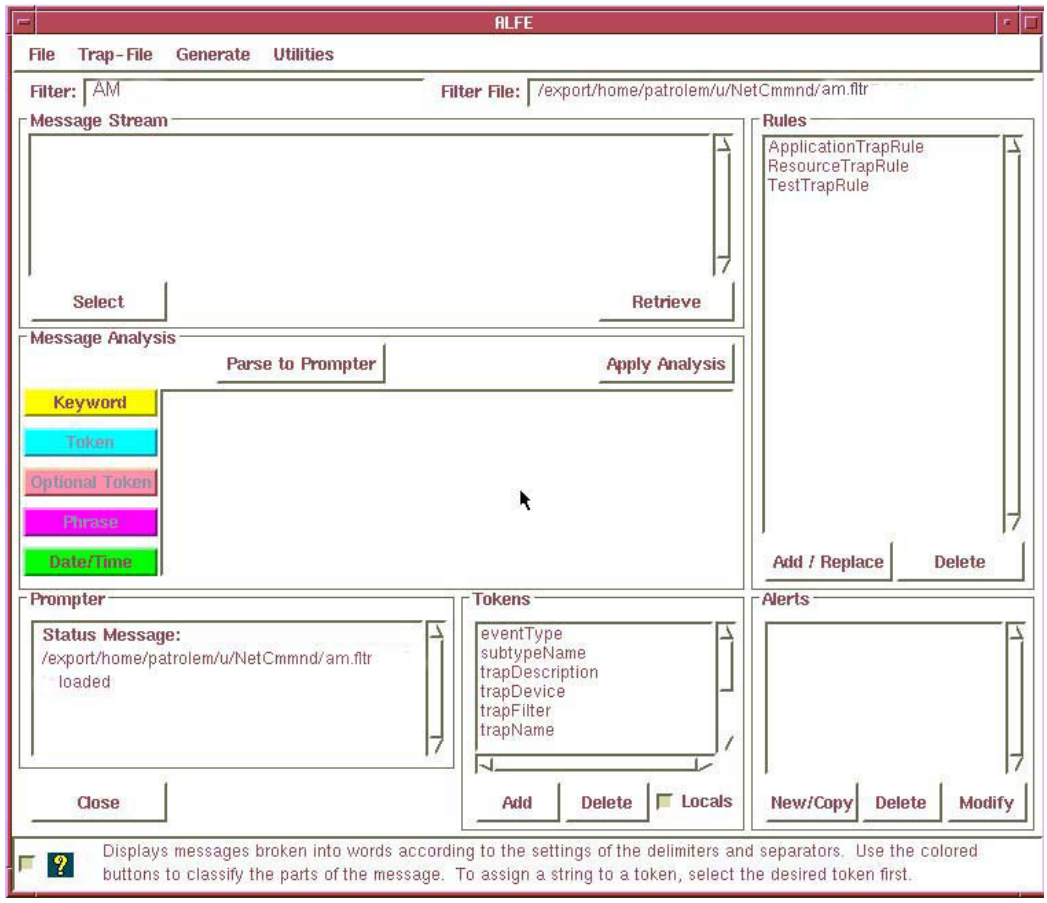
Figure 40. AM Filter

9. Select **Generate > Generate Production Filter**.
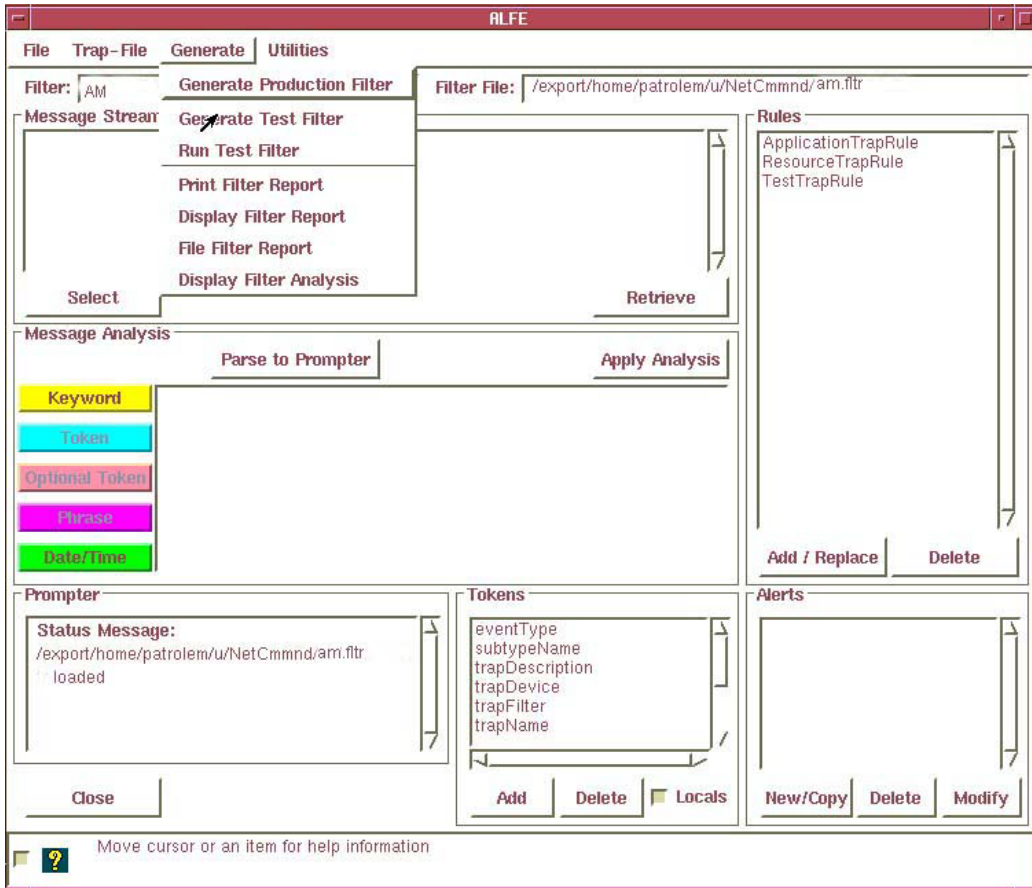
Figure 41. Generate Production Filter

10. When the system generates the filter, the message "Filter engine generated" displays in the Prompter box.

Figure 42. Prompter box

11. Select **File > Save**.
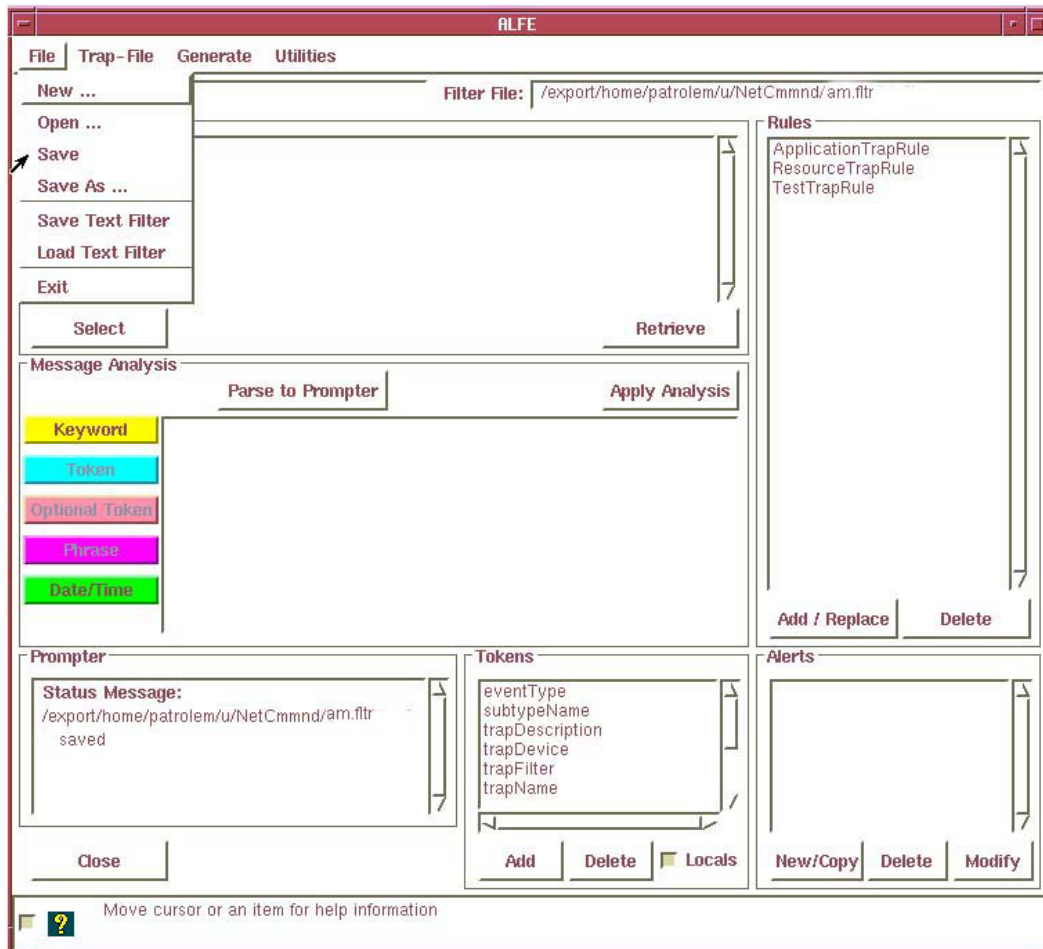
Figure 43. Save Filter

12. After the system saves the filter the message "/home/u/NetCmmnd/AM.fltr saved" displays in the Prompter box. Close the ALFE window.

Defining the AM Filter Path

1. Using the Patrol M Console, define the AM filter path.
2. Select **Customization > Path Definition**.
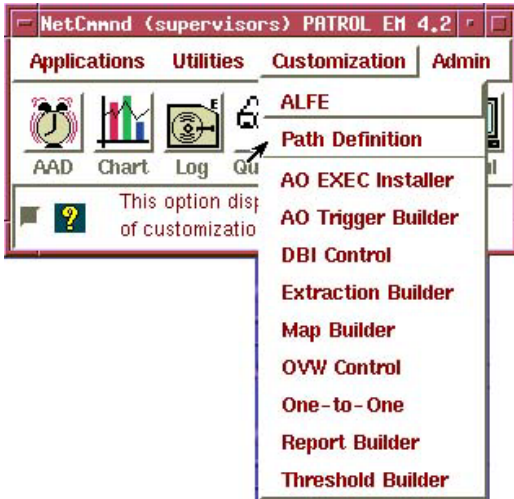
Figure 44. Path Definition

3. The Path Definition dialog window opens.
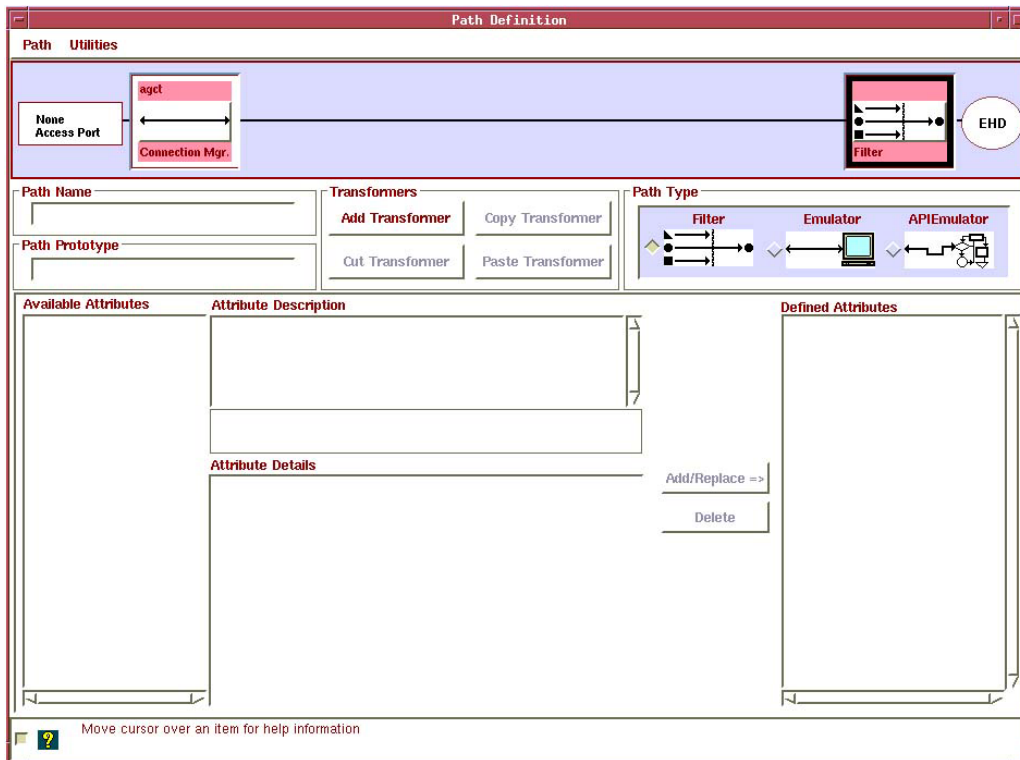
Figure 45. Path Definition Dialog box

4. To create the AM path, select **Path > New**.
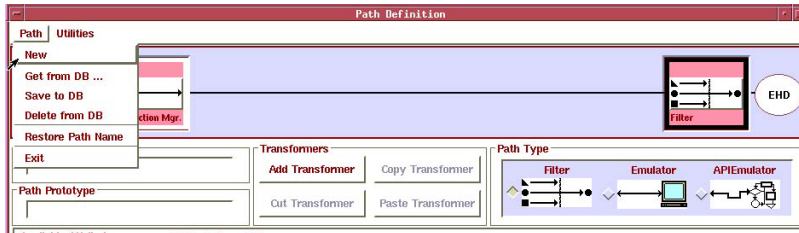
Figure 46. Create AM Path

5. Enter "**AM**" for the path name.
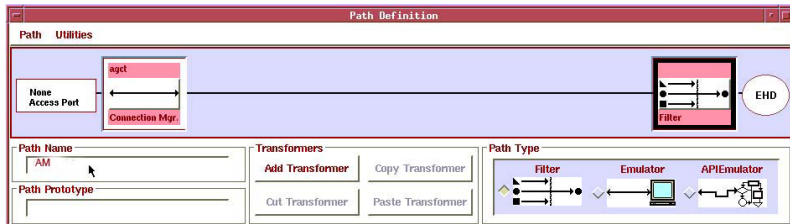
Figure 47. Enter AM Path Name

6. Left-click on the **Filter** icon and select **multi_lstn** for the Path Prototype.
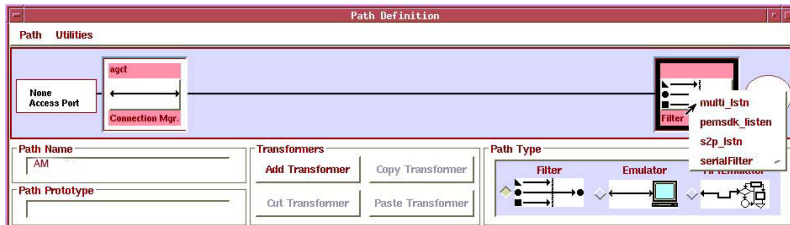
Figure 48. Path Prototype

7. The multi-lstn path prototype defines the path attributes.
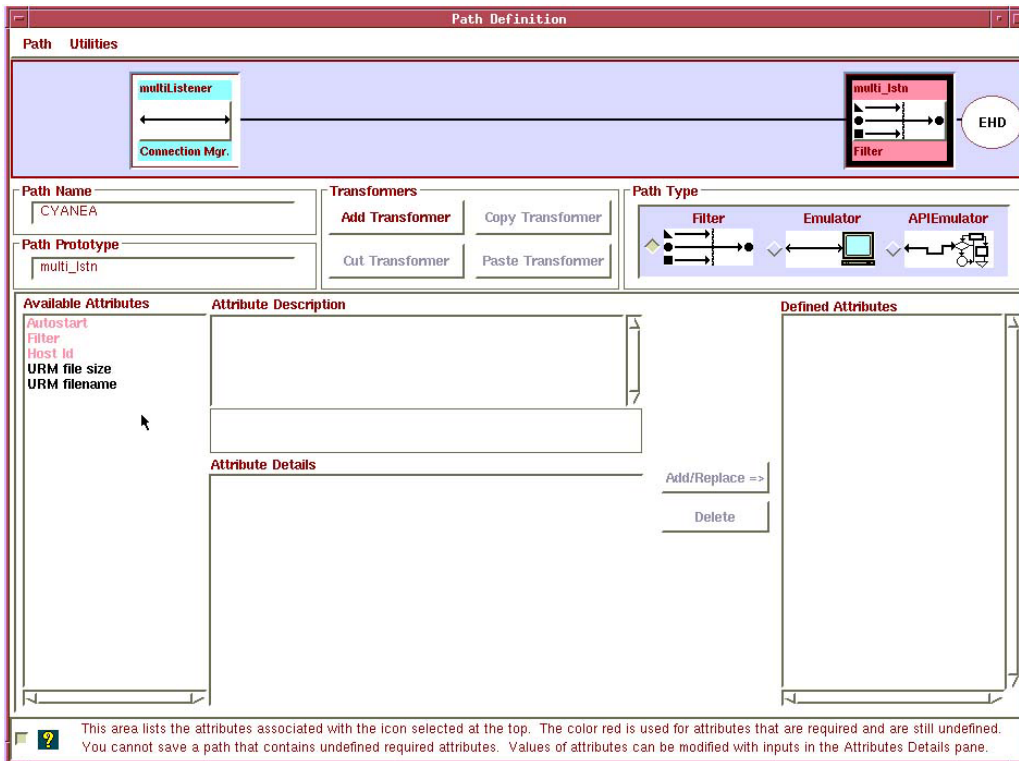
Figure 49. Path Attributes

8. Set the required path attributes to the following values: Autostart = true; Filter = AM; Host ID = name of your Patrol EM server; The attributes "URM files size" and "URM filename" are optional.

9. Attribute values are set by selecting the attribute in the **Available Attributes** box, typing in or selecting the desired value in the **Attribute Details** box, then selecting the **Add/Replace** button. The completed path definition displays in the Path Definition dialog window.
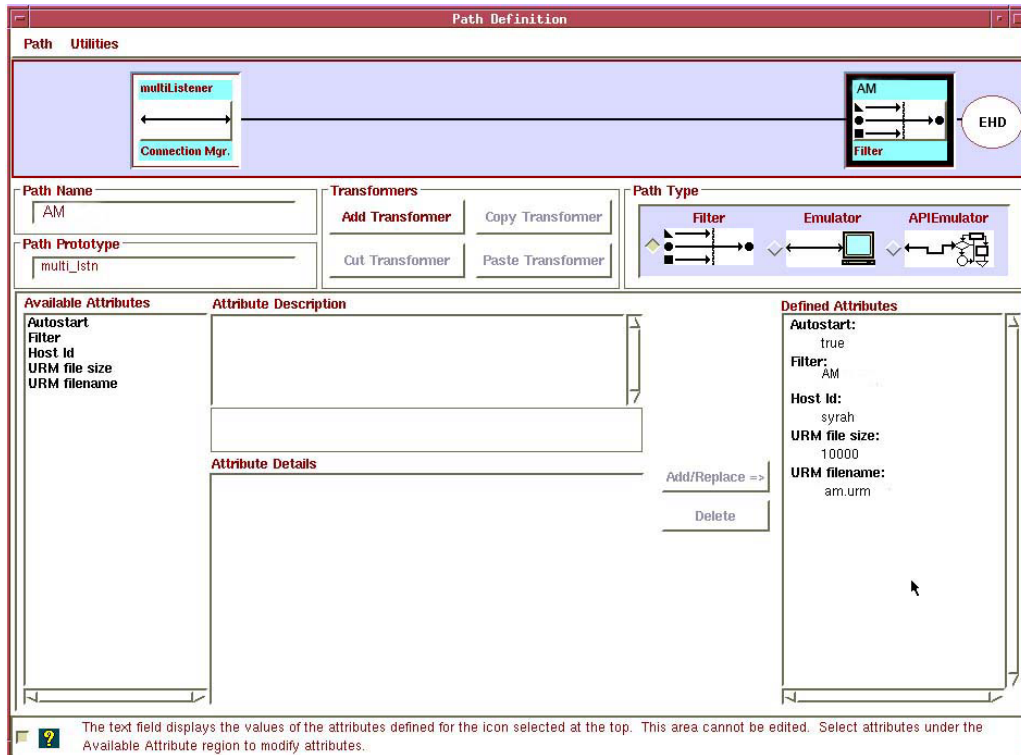
Figure 50. Path Definition

10. Select **Path > Save to DB**.

Figure 51. Save to database

11. Select **Yes** to update the configuration.

Figure 52. Update Configuration

12. Exit from the Path Definition dialog window.
13. Using the Patrol EM Console, obtain the configuration: Select **Admin > Obtain Configuration**.
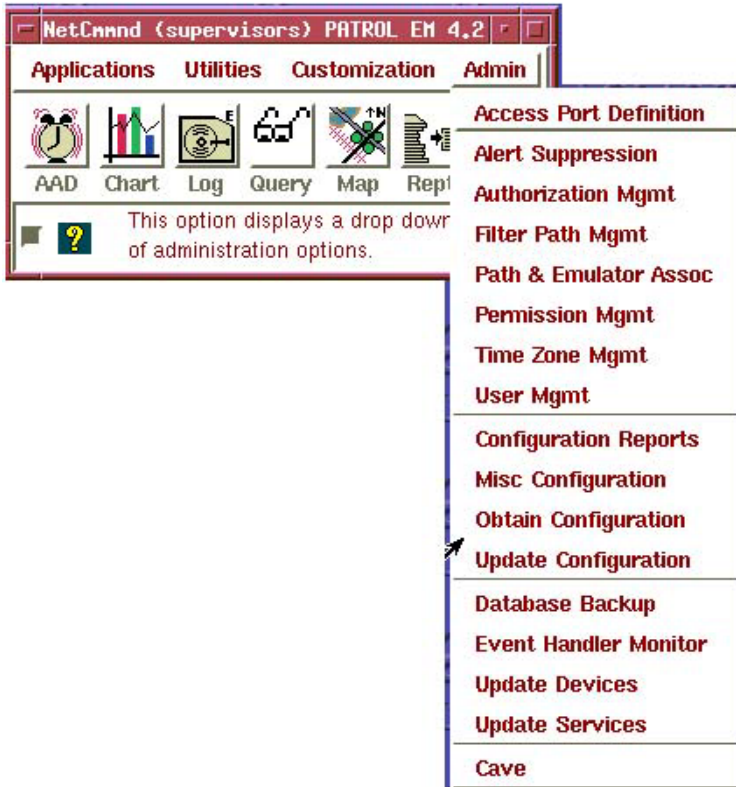
Figure 53. Obtain Configuration

14. Verify that the AM filter path is running by selecting **FIlter Path Mgmt** from the Patrol EM Console's **Admin** menu. The Filter Path Management dialog window displays. The AM path should be listed in the **Active Filter Paths** box.
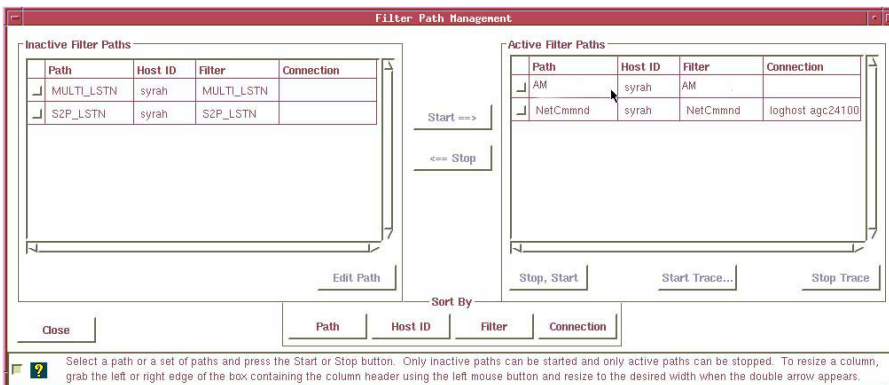
Figure 54. Filter Path Management

Installing and Configuring the AM SNMP Adapter

As noted in the Requirements section, the AM SNMP Adapter can be run on any system that has connectivity to the Application Monitor agent and the Patrol EM server. The Java runtime version 1.3 or later must be installed on the system and be included in the PATH environment variable.

AM SNMP Adapter Installation and Configuration on a Windows platform:

1. Copy the following files to a directory on the Windows platform:

   Note: These files need to be in the same directory.
   - AMTrapReceiver.jar
   - am.conf
   - amSnmpAdapter.bat (for Windows systems)
2. Edit the am.conf file to specify the following items:
   - Patrol EM server name
   - Socket number that you configured for the AM filter path
   - SNMP port number

   ##am.conf

   \#

   \# DESCRIPTION: AM BMC Patrol EM Adapter Configuration

   \#

   \# The configuration entries are as follows:

   \#

   \# PEM_HOST >Name of Patrol EM server

   \# PEM_SOCKET >Socket on Patrol EM server to receive AM trap data

   \# SNMP_PORT >Port number to listen for incoming SNMP trap on

   \#

   \# Copyright (c) 2003 by Cyanea Systems Corp. ALL RIGHTS RESERVED.

   ##
3. Navigate to the directory containing the Application Monitor SNMP Adapter files.
4. Start the AM SNMP Adapter by entering the following command at a DOS prompt:

```
> amSnmpAdapter.bat
```

The AM SNMP Adapter will begin listening for SNMP traps on the port specified in the am.conf file. Error messages will be generated and output to standard out if any problems occur in receiving and decoding the AM SNMP traps. The error output can be redirected to a log file if desired by starting the AM SNMP Adapter with the following command:

```
> amSnmpAdapter.bat > am.log
```

The Application Monitor SNMP Adapter Installation and Configuration on a Unix platform:

1. On the Unix platform, extract the Application Monitor SNMP Adapter files from am.tar:

   ```
   tar xvf am.tar
   ```

   Extract the files to the /home/u/NetCmmnd directory. If desired, you may move the files to another directory, but all of the Application Monitor SNMP Adapter files must be in the same directory.
2. Edit the am.conf file as described above.
3. Login as "root", and execute the following command:

   ```
   ./amSnmpAdapter.sh > am.log &
   ```

   This will start the Application Monitor SNMP Adapter running in the background. The system will output any error messages to the file am.log.

Using Patrol EM with the Application Monitor

Configure the AM agent to send SNMP traps to the configured the Application Monitor SNMP Adapter hose, and AM events will show up in the Patrol EM Active Alert Display.

Click on an event and select **Actions > About** to view more information about the selected event.

The details for the event display in the Stored Token box of the About window.

Figure 55. About window

Appendix C. Port Consolidator

The port consolidator is used to reduce network resources. Typically, it's used in the firewall environment. The following shows one deployment scenario:

Note: All Data Collectors and port consolidators are installed on the same physical machine.
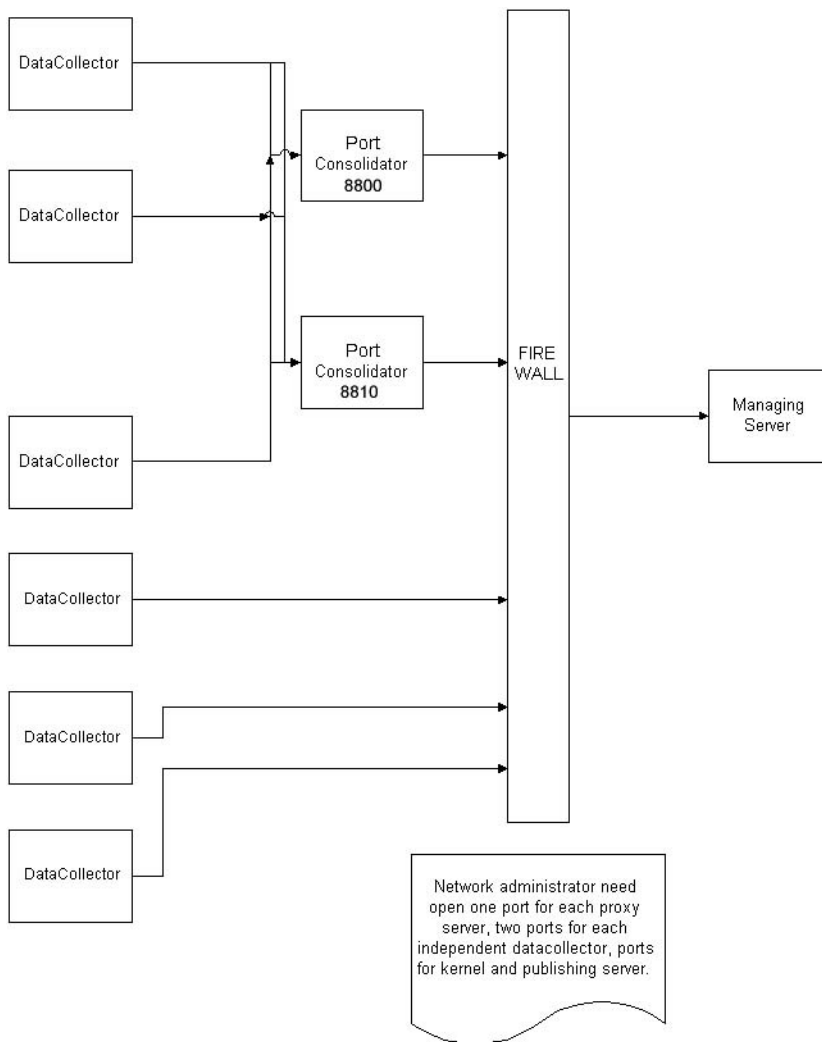
Figure 56. Port Consolidator deployment scenario

Manual Installation

In the normal case, the port consolidator is installed at the same physical machine as the Data Collector.

Here <AM_HOME> is the same as the Data Collector's <AM_HOME>. There are four subdirectories under <AM_HOME>. They are lib, bin, etc, logs. <AM_HOME>/lib contains the required jar files.

WebSphere:

```
<AM_HOME>/lib/ext
```

```
ppe.proxy-intf.jar, ppe.probe.jar, ppe.probe-intf.jar, kernel.common.jar,
model.jar, common.jar, cyaneaaux.jar,ppe.proxy.jar, ppe.was_<version>.jar
```

Note: Replace <version> with the version of WebSphere you are running, either
ppe.was_5.jar or ppe.was_6.jar.

WebLogic:

```
<AM_HOME>/lib/ext
```

```
common.jar, ppe.proxy.jar, cyaneaaux.jar, ppe.proxy-intf.jar, ppe.probe.jar,
ppe.probe-intf.jar, kernel.common.jar, model.jar, ppe.wls_<version>.jar
```

Note: Replace <version> with the version of WebLogic you are running, either
ppe.wls_7.jar, ppe.wls_8.jar or ppe.wls_8130.jar.

```
<AM_HOME>/etc contains the configuration files:
```

```
proxy.policy, log.properties, LogMessages.properties
```

UNIX:

```
<AM_HOME>bin contains the scripts to start/stop the port consolidator:
```

```
proxyserverctrl_ws.sh, proxyserverctrl_wl.sh
```

Windows:

```
<AM_HOME>bin contains the scripts to start/stop the port consolidator:
```

```
proxyserverctrl_ws.bat, proxyserverctrl_wl.bat
```

Start/Stop Port Consolidator

Usage: ./proxyserverctrl_ws.sh (start | stop | forcestop | killall | ping | list |
delete)

start - start port consolidator

stop - stop port consolidator

forcestop - kill -9 all port consolidator proccesses

ping - ping port consolidator

list - list all registered Data Collectors

delete - delete all registered Data Collectors

Configuring Data Collector

To enable port consolidator on the Data Collector, add the following properties in
datacollector.properties:

```
proxy.host
proxy.port (8800)
```

To set the Java system property java.rmi.server.codebase:

```
<MS_AM_HOME>=/opt/ibm/wsam
```

```
<AM_HOME>=/opt/dc
```

WebSphere: Append the following jars to java.rmi.server.codebase:

```
file://<MS_AM_HOME>/lib/ppe.proxy-intf.jar
file://<MS_AM_HOME>/lib3.2/ppe.proxy.jar
```

Weblogic: Append the following jars to java.rmi.server.codebase:

```
file://<MS_AM_HOME>/lib/ppe.proxy-intf.jar
file://<MS_AM_HOME>/lib3.2/ppe.proxy.jar
```

Append to the classpath:

```
<AM_HOME>/lib/ext/ppe.proxy.jar
<AM_HOME>/lib/ext/ppe.proxy-intf.jar
```

Appendix D. Configuration Changes Made During the Installation of the Data Collector

Application Servers Configuration

The following tables provide the configuration settings that will be done during the installation.

Configuration for WebSphere 5.0.2 Portal on Intel/Linux

These are the recommended Application Server options for WebSphere 5.0.2 on Linux.

Table 7. Application Server Options for WebSphere 5.0.2 Portal on Linux

Entity	Settings

Generic JVM Arguments	Add the following as arguments to the JVM command line:
	Note: The order the instructions are performed in is important. Please follow this order.
	
	`-Xoss2M -Xss1M -Xbootclasspath/p:<AM_HOME>`
	`/lib/bcm-bootstrap.jar:`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam`

Environment Entries	Set the following environment variables: `LD_LIBRARY_PATH =<AM_HOME>/lib`

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	  `file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.was_5.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	  Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.nodename=<node name>`
	• `am.appserver=<Application Server name>`
	• `appserver.platform=wps502`
	• `com.ibm.websphere.classloader.plugin=`
	  `com.cyanea.bcm.websphere.BcmPlugin`
	• `deploymentmgr.rmi.connection=`
	  `<deployment manager host>:<deployment manager rmi port>`
	
	  Note: The deploymnetmgr.rmi.connection property is only required when using the deployment manager. Remove the old rmi manager host and port property.

Custom Services	Add a custom service as follows:
	
	`Name: AM Custom Service`
	
	`Classname: com.cyanea.ws5.ProbeService`
	
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Table 7. Application Server Options for WebSphere 5.0.2 Portal on Linux (continued)

Entity	Settings
Shared Library Settings	Modify ″WPSlib ″ Shared Libraries at the node level to include ppe.wps_5.jar in the classpath. This can be done through administrative console or by modifying libraries.xml at the node level. To set it through administrative console go to: Environment-->Shared libraries-->WPSlib Add <AM_HOME>/lib/ppe.wps_5.jar to the classpath.
Performance Monitoring Service	beanModule=X cacheModule=N connectionPoolModule=H j2cModule=H jvmRuntimeModule=H orbPerfModule=H servletSessionsModule=H systemModule=M threadPoolModule=H transactionModule=M webAppModule=H webServicesModule=N wlmModule=M wsgwModule=N

Configuration for WebSphere 5.0.2 Portal on AIX

These are the recommended Application Server options for WebSphere 5.0.2 on AIX.

Table 8. Application Server Options for WebSphere 5.0.2 Portal on AIX

Entity	Settings

Generic JVM Arguments	Add the following as arguments to the JVM command line:
	Note: The order the instructions are performed in is important. Please follow this order.
	
	`-Xbootclasspath/p:<AM_HOME>/lib/bcm-bootstrap.jar:`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam -Xgcthreads1`

Environment Entries	Set the following environment variables: • `_JVM_THREAD_DUMP_BUFFER_SIZE=25000000` • `AIXTHREAD_SCOPE=S` • `AIXTHREAD_MUTEX_DEBUG=OFF` • `AIXTHREAD_COND_DEBUG=OFF` • `AIXTHREAD_RWLOCK_DEBUG=OFF` • `LIBPATH=<AM_HOME>/lib` In order to view thread CPU times, set the following environment variable: • `AIXTHREAD_ENRUSG=ON`

Entity	Settings

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	  `file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.was_5.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	  Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `appserver.platform=wps502`
	• `com.ibm.websphere.classloader.plugin=`
	  `com.cyanea.bcm.websphere.BcmPlugin`
	• `deploymentmgr.rmi.connection=`
	  `<deployment manager host>:<deployment manager rmi port>`
	
	Note: The deploymnetmgr.rmi.connection property is only required when using the deployment manager. Remove the old rmi manager host and port property.

Custom Services	Add a custom service as follows:
	`Name: AM Custom Service`
	`Classname: com.cyanea.ws5.ProbeService`
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Shared Library Settings	Modify ″WPSlib ″ Shared Libraries at the node level to include ppe.wps_5.jar in the classpath. This can be done through administrative console or by modifying libraries.xml at the node level. To set it through administrative console go to: Environment-->Shared libraries-->WPSlib Add <AM_HOME>/lib/ppe.wps_5.jar to the classpath.
Performance Monitoring Service	beanModule=X cacheModule=N connectionPoolModule=H j2cModule=H jvmRuntimeModule=H orbPerfModule=H servletSessionsModule=H systemModule=M threadPoolModule=H transactionModule=M webAppModule=H webServicesModule=N wlmModule=M wsgwModule=N

Configuration for WebSphere 5.0.2 Portal on Solaris

These are the recommended Application Server options for WebSphere 5.0.2 on Solaris.

Table 9. Application Server Options for WebSphere 5.0.2 Portal on Solaris

Entity	Settings
Generic JVM Arguments	Run the JVM in server mode. Add the following as arguments to the JVM command line: **Note:** The order the instructions are performed in is important. Please follow this order. ``` -server -Xbootclasspath/p:<AM_HOME> /lib/bcm-bootstrap.jar: <AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam ``` **Note:** The default NewSize and MaxNewSize might be small for some Applications if the Application is allocating large numbers of short living objects. Here are the settings we recommend for an application that allocates many short living objects: ``` -XX:+DisableExplicitGC -XX:NewSize=128m -XX:MaxNewSize=256m -Xconcurrentio ``` **Note:** The arguments NewSize and MaxNewSize should be set based on the Maximum and Minimum heap settings of the JVM.

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	  `file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.was_5.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	  Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.probe.stdout=<path of Application Server stdout>`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `appserver.platform=wps502`
	• `com.ibm.websphere.classloader.plugin=`
	  `com.cyanea.bcm.websphere.BcmPlugin`
	• `deploymentmgr.rmi.connection=`
	  `<deployment manager host>:<deployment manager rmi port>`
	
	  Note: The deploymnetmgr.rmi.connection property is only required when using the deployment manager. Remove the old rmi manager host and port property.

Custom Services	Add a custom service as follows:
	
	`Name: AM Custom Service`
	
	`Classname: com.cyanea.ws5.ProbeService`
	
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Shared Library Settings	Modify ″WPSlib ″ Shared Libraries at the node level to include ppe.wps_5.jar in the classpath. This can be done through administrative console or by modifying libraries.xml at the node level. To set it through administrative console go to: Environment-->Shared libraries-->WPSlib Add <AM_HOME>/lib/ppe.wps_5.jar to the classpath.

Table 9. Application Server Options for WebSphere 5.0.2 Portal on Solaris (continued)

Entity	Settings
Performance Monitoring Service	beanModule=X cacheModule=N connectionPoolModule=H j2cModule=H jvmRuntimeModule=H orbPerfModule=H servletSessionsModule=H systemModule=M threadPoolModule=H transactionModule=M webAppModule=H webServicesModule=N wlmModule=M wsgwModule=N
Environment Entries	Set the following environment variables: `LD_LIBRARY_PATH=<AM_HOME>/lib`

Configuration for WebSphere 5.0.2 Portal on Windows

These are the recommended Application Server options for WebSphere 5.0.2 on Windows.

Table 10. Application Server Options for WebSphere 5.0.2 Portal on Windows

Entity	Settings

Generic JVM Arguments	Add the following as arguments to the JVM command line:
	Note: The order the instructions are performed in is important. Please follow this order.
	
	`-Xbootclasspath/p:<AM_HOME>`
	`/lib/bcm-bootstrap.jar;`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam`

Environment Entries	Set the following environment variables:
	`_JVM_THREAD_DUMP_BUFFER_SIZE=25000000`
	`PATH=<AM_HOME>\lib`

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	`   file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	`   file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	`   file://<MS_AM_HOME>/lib3.2/ppe.was_5.jar`
	`   file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	Where <MS_AM_HOME> is the directory where the Managing Server is installed. For example, C:\Program~1\IBM\wsam
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `appserver.platform=wps502`
	• `com.ibm.websphere.classloader.plugin=`
	`   com.cyanea.bcm.websphere.BcmPlugin`
	• `deploymentmgr.rmi.connection=`
	`<deployment manager host>:<deployment manager rmi port>`
	
	Note: The deploymnetmgr.rmi.connection property is only required when using the deployment manager. Remove the old rmi manager host and port property.

Custom Services	Add a custom service as follows:
	`Name: AM Custom Service`
	`Classname: com.cyanea.ws5.ProbeService`
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Entity	Settings
Shared Library Settings	Modify ″WPSlib ″ Shared Libraries at the node level to include ppe.wps_5.jar in the classpath. This can be done through administrative console or by modifying libraries.xml at the node level. To set it through administrative console go to: Environment-->Shared libraries-->WPSlib Add <AM_HOME>/lib/ppe.wps_5.jar to the classpath.
Performance Monitoring Service	beanModule=X cacheModule=N connectionPoolModule=H j2cModule=H jvmRuntimeModule=H orbPerfModule=H servletSessionsModule=H systemModule=M threadPoolModule=H transactionModule=M webAppModule=H webServicesModule=N wlmModule=M wsgwModule=N

Configuration for WebSphere 5.0.2.6/5.0.2.8 on Intel/Linux and z/Linux

These are the recommended Application Server options for WebSphere 5.0.2.6/5.0.2.8 on Intel/Linux and z/Linux.

Table 11. Application Server Options for WebSphere 5.0.2.6/5.0.2.8 on Intel/Linux and z/Linux

Entity	Settings

Generic JVM Arguments	Add the following as arguments to the JVM command line:
	Note: The order the instructions are performed in is important. Please follow this order.
	
	`-Xoss2M -Xss1M -Xbootclasspath/p:<AM_HOME>`
	` /lib/bcm-bootstrap.jar:`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam`

Environment Entries	Set the following environment variables: `LD_LIBRARY_PATH =<AM_HOME>/lib`

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	`  file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	`  file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	`  file://<MS_AM_HOME>/lib3.2/ppe.was_5.jar`
	`  file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `appserver.platform=was502`
	• Optional if you are using MQ:
	
	`am.ext.dirs=<MQ HOME>/lib`
	• `com.ibm.websphere.classloader.plugin=`
	`    com.cyanea.bcm.websphere.BcmPlugin`
	• `deploymentmgr.rmi.connection=`
	`<deployment manager host>:<deployment manager rmi port>`
	
	Note: The deploymnetmgr.rmi.connection property is only required when using the deployment manager. Remove the old rmi manager host and port property.

Table 11. Application Server Options for WebSphere 5.0.2.6/5.0.2.8 on Intel/Linux and z/Linux (continued)

Entity	Settings
Custom Services	Add a custom service as follows: Name: AM Custom Service Classname: com.cyanea.ws5.ProbeService Classpath: null **Note:** There is a defect in the Administrative Console that will not allow you to type an empty classpath.
Performance Monitoring Service	beanModule=X cacheModule=N connectionPoolModule=H j2cModule=H jvmRuntimeModule=H orbPerfModule=H servletSessionsModule=H systemModule=M threadPoolModule=H transactionModule=M webAppModule=H webServicesModule=N wlmModule=M wsgwModule=N

Configuration for WebSphere 5.0.2.6/5.0.2.8 on AIX

These are the recommended Application Server options for WebSphere 5.0.2.6/5.0.2.8 on AIX.

Table 12. Application Server Options for WebSphere 5.0.2.6/5.0.2.8 on AIX

Entity	Settings
Generic JVM Arguments	Add the following as arguments to the JVM command line: **Note:** The order the instructions are performed in is important. Please follow this order. -Xbootclasspath/p:<AM_HOME> /lib/bcm-bootstrap.jar: <AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam -Xgcthreads1
Environment Entries	Set the following environment variables: • _JVM_THREAD_DUMP_BUFFER_SIZE=25000000 • AIXTHREAD_SCOPE=S • AIXTHREAD_MUTEX_DEBUG=OFF • AIXTHREAD_COND_DEBUG=OFF • AIXTHREAD_RWLOCK_DEBUG=OFF • LIBPATH=<AM_HOME>/lib In order to view thread CPU times, set the following environment variable: • AIXTHREAD_ENRUSG=ON

Entity	Settings

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	  `file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.was_5.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `appserver.platform=was502`
	• Optional if you are using MQ:
	  `am.ext.dirs=<MQ HOME>/lib`
	• `com.ibm.websphere.classloader.plugin=`
	   `com.cyanea.bcm.websphere.BcmPlugin`
	• `deploymentmgr.rmi.connection=`
	  `<deployment manager host>:<deployment manager rmi port>`
	
	Note: The deploymnetmgr.rmi.connection property is only required when using the deployment manager. Remove the old rmi manager host and port property.

Custom Services	Add a custom service as follows:
	`Name: AM Custom Service`
	`Classname: com.cyanea.ws5.ProbeService`
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Performance Monitoring Service	beanModule=X cacheModule=N connectionPoolModule=H j2cModule=H jvmRuntimeModule=H orbPerfModule=H servletSessionsModule=H systemModule=M threadPoolModule=H transactionModule=M webAppModule=H webServicesModule=N wlmModule=M wsgwModule=N

Configuration for WebSphere 5.0.2.6/5.0.2.8 on Solaris

These are the recommended Application Server options for WebSphere 5.0.2.6/5.0.2.8 on Solaris.

Table 13. Application Server Options for WebSphere 5.0.2.6/5.0.2.8 on Solaris

Entity	Settings

Generic JVM Arguments	Run the JVM in server mode.
	
	Add the following as arguments to the JVM command line:
	Note: The order the instructions are performed in is important. Please follow this order.
	
	`-server -Xbootclasspath/p:<AM_HOME>`
	` /lib/bcm-bootstrap.jar:`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam`
	
	Note: The default NewSize and MaxNewSize might be small for some Applications if the Application is allocating large numbers of short living objects.
	
	Here are the settings we recommend for an application that allocates many short living objects:
	
	`-XX:+DisableExplicitGC -XX:NewSize=128m`
	`-XX:MaxNewSize=256m -Xconcurrentio`
	
	Note: The arguments NewSize and MaxNewSize should be set based on the Maximum and Minimum heap settings of the JVM.

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	` file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	` file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	` file://<MS_AM_HOME>/lib3.2/ppe.was_5.jar`
	` file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	 Where \<MS_AM_HOME\> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.probe.stdout=<path of application server stdout>`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `appserver.platform=was502`
	• Optional if you are using MQ:
	 `am.ext.dirs=<MQ HOME>/lib`
	• `com.ibm.websphere.classloader.plugin=`
	`    com.cyanea.bcm.websphere.BcmPlugin`
	• `deploymentmgr.rmi.connection=`
	`<deployment manager host>:<deployment manager rmi port>`
	
	 Note: The deploymnetmgr.rmi.connection property is only required when using the deployment manager. Remove the old rmi manager host and port property.

Custom Services	Add a custom service as follows:
	
	`Name: AM Custom Service`
	
	`Classname: com.cyanea.ws5.ProbeService`
	
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Table 13. Application Server Options for WebSphere 5.0.2.6/5.0.2.8 on Solaris (continued)

Entity	Settings
Performance Monitoring Service	beanModule=X cacheModule=N connectionPoolModule=H j2cModule=H jvmRuntimeModule=H orbPerfModule=H servletSessionsModule=H systemModule=M threadPoolModule=H transactionModule=M webAppModule=H webServicesModule=N wlmModule=M wsgwModule=N
Environment Entries	Set the following environment variables: `LD_LIBRARY_PATH=<AM_HOME>/lib`

Configuration for WebSphere 5.0.2.6/5.0.2.8 on HP-UX

These are the recommended Application Server options for WebSphere 5.0.2.6/5.0.2.8 on HP-UX.

Table 14. Application Server Options for WebSphere 5.0.2.6/5.0.2.8 on HP-UX

Entity	Settings

Generic JVM Arguments	Add the following as arguments to the JVM command line:
	Note: The order the instructions are performed in is important. Please follow this order.
	`-Xbootclasspath/p:<AM_HOME>`
	`/lib/bcm-bootstrap.jar:`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam`
	
	Note: The default NewSize and MaxNewSize might be small for some Applications if the Application is allocating large numbers of short living objects.
	
	Some tuning we recommend for an application that allocates many short living objects:
	`-XX:+DisableExplicitGC -XX:NewSize=128m`
	` -XX:MaxNewSize=256m -Xconcurrentio`
	
	Note: NewSize and MaxNewSize should be changed based on the Maximum and Minimum heap settings of the JVM.

Entity	Settings

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	`file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	`file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	`file://<MS_AM_HOME>/lib3.2/ppe.was_5.jar`
	`file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.probe.stdout=<path of application server stdout>`
	• `am.home=<AM_HOME>`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `appserver.platform=was502`
	• Optional if you are using MQ:
	`am.ext.dirs=<MQ HOME>/lib`
	• `com.ibm.websphere.classloader.plugin=`
	`com.cyanea.bcm.websphere.BcmPlugin`
	• `deploymentmgr.rmi.connection=`
	`<deployment manager host>:<deployment manager rmi port>`
	
	Note: The deploymnetmgr.rmi.connection property is only required when using the deployment manager. Remove the old rmi manager host and port property.

Custom Services	Add a custom service as follows:
	`Name: AM Custom Service`
	`Classname: com.cyanea.ws5.ProbeService`
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Performance Monitoring Service	beanModule=X cacheModule=N connectionPoolModule=H j2cModule=H jvmRuntimeModule=H orbPerfModule=H servletSessionsModule=H systemModule=M threadPoolModule=H transactionModule=M webAppModule=H webServicesModule=N wlmModule=M wsgwModule=N

Environment Entries	Set the following environment variables:
	`SHLIB_PATH=<AM_HOME>/lib`
	`am.home=<AM_HOME>`
	`am.nodename=<node name>`
	`am.appserver=<application server name>`
	`appserver.platform=was502`
	
	Optional if you are using MQ:
	`am.ext.dirs=<MQ HOME>/lib`

Configuration for WebSphere 5.0.2.6/5.0.2.8 on Windows

These are the recommended Application Server options for WebSphere 5.0.2.6/5.0.2.8 on Windows.

Table 15. Application Server Options for WebSphere 5.0.2.6/5.0.2.8 on Windows

Entity	Settings

Generic JVM Arguments	Add the following as arguments to the JVM command line:
	Note: The order the instructions are performed in is important. Please follow this order.
	
	`-Xbootclasspath/p:<AM_HOME>`
	`/lib/bcm-bootstrap.jar;`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam`

Environment Entries	Set the following environment variables:
	`_JVM_THREAD_DUMP_BUFFER_SIZE=25000000`
	`PATH=<AM_HOME>\lib`

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	`  file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	`  file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	`  file://<MS_AM_HOME>/lib3.2/ppe.was_5.jar`
	`  file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	Where <MS_AM_HOME> is the directory where the Managing Server is installed. For example, C:\Program~1\IBM\wsam
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `appserver.platform=was502`
	• Optional if you are using MQ:
	`am.ext.dirs=<MQ HOME>/lib`
	• `com.ibm.websphere.classloader.plugin=`
	`   com.cyanea.bcm.websphere.BcmPlugin`
	• `deploymentmgr.rmi.connection=`
	`<deployment manager host>:<deployment manager rmi port>`
	
	Note: The deploymnetmgr.rmi.connection property is only required when using the deployment manager. Remove the old rmi manager host and port property.

Custom Services	Add a custom service as follows:
	`Name: AM Custom Service`
	`Classname: com.cyanea.ws5.ProbeService`
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Performance Monitoring Service	beanModule=X cacheModule=N connectionPoolModule=H j2cModule=H jvmRuntimeModule=H orbPerfModule=H servletSessionsModule=H systemModule=M threadPoolModule=H transactionModule=M webAppModule=H webServicesModule=N wlmModule=M wsgwModule=N

Configuration for WebSphere 5.1.1 on AIX

These are the recommended Application Server options for WebSphere 5.1.1 on AIX.

Table 16. Application Server Options for WebSphere 5.1.1 on AIX

Entity	Settings
Generic JVM Arguments	Add the following as arguments to the JVM command line: ``` -Xbootclasspath/p:<AM_HOME> /lib/bcm-bootstrap.jar: <AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam ```
Environment Entries	Set the following environment variables: • `_JVM_THREAD_DUMP_BUFFER_SIZE=25000000` • `AIXTHREAD_SCOPE=S` • `AIXTHREAD_MUTEX_DEBUG=OFF` • `AIXTHREAD_COND_DEBUG=OFF` • `AIXTHREAD_RWLOCK_DEBUG=OFF` • `LIBPATH=<AM_HOME>/lib` In order to view thread CPU times, set the following environment variable: • `AIXTHREAD_ENRUSG=ON`

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	  `file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.was_5.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	  Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `appserver.platform=was511`
	• Optional if you are using MQ:
	  `am.ext.dirs=<MQ HOME>/lib`
	• `com.ibm.websphere.classloader.plugin=`
	   `com.cyanea.bcm.websphere.BcmPlugin`
	• `deploymentmgr.rmi.connection=`
	  `<deployment manager host>:<deployment manager rmi port>`
	
	  Note: The deploymnetmgr.rmi.connection property is only required when using the deployment manager. Remove the old rmi manager host and port property.

Custom Services	Add a custom service as follows:
	
	`Name: AM Custom Service`
	
	`Classname: com.cyanea.ws5.ProbeService`
	
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Entity	Settings
Performance Monitoring Service	beanModule=X cacheModule=N connectionPoolModule=H j2cModule=H jvmRuntimeModule=H orbPerfModule=H servletSessionsModule=H systemModule=M threadPoolModule=H transactionModule=M webAppModule=H webServicesModule=N wlmModule=M wsgwModule=N

Configuration for WebSphere 5.1.1 on Intel/Linux and z/Linux

These are the recommended Application Server options for WebSphere 5.1.1 on Intel/Linux and z/Linux.

Table 17. Application Server Options for WebSphere 5.1.1 on Intel/Linux and z/Linux

Entity	Settings
Generic JVM Arguments	Add the following as arguments to the JVM command line: -Xoss2M -Xss1M -Xbootclasspath/p:<AM_HOME>/lib/bcm-bootstrap.jar: <AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam <AM_HOME> = AM installation directory
Environment Entries	Set the following environment variables: • LD_LIBRARY_PATH =<AM_HOME>/lib

Table 17. Application Server Options for WebSphere 5.1.1 on Intel/Linux and z/Linux (continued)

Entity	Settings

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	`file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	`file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	`file://<MS_AM_HOME>/lib3.2/ppe.was_5.jar`
	`file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `appserver.platform=was511`
	• Optional if you are using MQ:
	`am.ext.dirs=<MQ HOME>/lib`
	• `com.ibm.websphere.classloader.plugin=`
	`   com.cyanea.bcm.websphere.BcmPlugin`
	• `deploymentmgr.rmi.connection=`
	`<deployment manager host>:<deployment manager rmi port>`
	
	Note: The deploymnetmgr.rmi.connection property is only required when using the deployment manager. Remove the old rmi manager host and port property.

Custom Services	Add a custom service as follows:
	`Name: AM Custom Service`
	`Classname: com.cyanea.ws5.ProbeService`
	`Classpath:null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Performance Monitoring Service	beanModule=X cacheModule=N connectionPoolModule=H j2cModule=H jvmRuntimeModule=H orbPerfModule=H servletSessionsModule=H systemModule=M threadPoolModule=H transactionModule=M webAppModule=H webServicesModule=N wlmModule=M wsgwModule=N

Configuration for WebSphere 5.1.1 on Solaris

These are the recommended Application Server options for WebSphere 5.1.1 on Solaris.

Table 18. Application Server Options for WebSphere 5.1.1 on Solaris

Entity	Settings

Generic JVM Arguments	Run the JVM in server mode.
	
	Add the following as arguments to the JVM command line:
	Note: The order in which the options are specified is important. Please follow this order.
	
	`-server -Xbootclasspath/p:<AM_HOME>`
	`/lib/bcm-bootstrap.jar:`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam`
	
	Note: The default NewSize and MaxNewSize might be small for some Applications if the Application is allocating large numbers of short living objects.
	
	Here are the settings we recommend for an application that allocates many short living objects:
	
	`-XX:+DisableExplicitGC -XX:NewSize=128m`
	`-XX:MaxNewSize=256m -Xconcurrentio`
	
	Note: The arguments NewSize and MaxNewSize should be set based on the Maximum and Minimum heap settings of the JVM.

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	`file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	`file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	`file://<MS_AM_HOME>/lib3.2/ppe.was_5.jar`
	`file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.probe.stdout=<path of application server stdout>`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `appserver.platform=was511`
	• Optional if you are using MQ:
	
	  `am.ext.dirs=<MQ HOME>/lib`
	• `com.ibm.websphere.classloader.plugin=`
	`   com.cyanea.bcm.websphere.BcmPlugin`
	• `deploymentmgr.rmi.connection=`
	`<deployment manager host>:<deployment manager rmi port>`
	
	Note: The deploymnetmgr.rmi.connection property is only required when using the deployment manager. Remove the old rmi manager host and port property.

Custom Services	Add a custom service as follows:
	
	`Name: AM Custom Service`
	
	`Classname: com.cyanea.ws5.ProbeService`
	
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Table 18. Application Server Options for WebSphere 5.1.1 on Solaris (continued)

Entity	Settings
Performance Monitoring Service	beanModule=X cacheModule=N connectionPoolModule=H j2cModule=H jvmRuntimeModule=H orbPerfModule=H servletSessionsModule=H systemModule=M threadPoolModule=H transactionModule=M webAppModule=H webServicesModule=N wlmModule=M wsgwModule=N
Environment Entries	Set the following environment variables: `LD_LIBRARY_PATH=<AM_HOME>/lib`

Configuration for WebSphere 5.1.1 on HP-UX

These are the recommended Application Server options for WebSphere 5.1.1 on HP-UX.

Table 19. Application Server Options for WebSphere 5.1.1 on HP-UX

Entity	Settings

Generic JVM Arguments	Add the following as arguments to the JVM command line:
	`-Xbootclasspath/p:<AM_HOME>`
	`/lib/bcm-bootstrap.jar:`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam`
	
	Note: The default NewSize and MaxNewSize might be small for some Applications if the Application is allocating large numbers of short living objects.
	
	Some tuning we recommend for an application that allocates many short living objects:
	`-XX:+DisableExplicitGC -XX:NewSize=128m`
	` -XX:MaxNewSize=256m -Xconcurrentio`
	
	Note: NewSize and MaxNewSize should be changed based on the Maximum and Minimum heap settings of the JVM.

Table 19. Application Server Options for WebSphere 5.1.1 on HP-UX (continued)

Entity	Settings

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	  `file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.was_5.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	  Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.probe.stdout=<path of application server stdout>`
	• `am.home=<AM_HOME>`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `appserver.platform=was511`
	• Optional if you are using MQ:
	  `am.ext.dirs=<MQ HOME>/lib`
	• `com.ibm.websphere.classloader.plugin=`
	  `com.cyanea.bcm.websphere.BcmPlugin`
	• `deploymentmgr.rmi.connection=`
	  `<deployment manager host>:<deployment manager rmi port>`
	
	  Note: The deploymnetmgr.rmi.connection property is only required when using the deployment manager. Remove the old rmi manager host and port property.

Custom Services	Add a custom service as follows:
	`Name: AM Custom Service`
	`Classname: com.cyanea.ws5.ProbeService`
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Performance Monitoring Service	beanModule=X cacheModule=N connectionPoolModule=H j2cModule=H jvmRuntimeModule=H orbPerfModule=H servletSessionsModule=H systemModule=M threadPoolModule=H transactionModule=M webAppModule=H webServicesModule=N wlmModule=M wsgwModule=N

Environment Entries	Set the following environment variables:
	`SHLIB_PATH=<AM_HOME>/lib`
	`am.home=<AM_HOME>`
	`am.nodename=<node name>`
	`am.appserver=<application server name>`
	`appserver.platform=was511`
	
	Optional if you are using MQ:
	`am.ext.dirs=<MQ HOME>/lib`

Configuration for WebSphere 5.1.1 on Windows

These are the recommended Application Server options for WebSphere 5.1.1 on Windows.

Table 20. Application Server Options for WebSphere 5.1.1 on Windows

Entity	Settings

Generic JVM Arguments	Add the following as arguments to the JVM command line:
	
	`-Xbootclasspath/p:<AM_HOME>`
	` /lib/bcm-bootstrap.jar;`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam`

Environment Entries	Set the following environment variables:
	
	`_JVM_THREAD_DUMP_BUFFER_SIZE=25000000`
	
	`PATH=<AM_HOME>\lib`

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	`   file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	`   file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	`   file://<MS_AM_HOME>/lib3.2/ppe.was_5.jar`
	`   file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	   Where <MS_AM_HOME> is the directory where the Managing Server is installed. For example, C:\Program~1\IBM\wsam
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>\etc\datacollector.policy`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `appserver.platform=was511`
	• Optional if you are using MQ:
	
	   `am.ext.dirs=<MQ HOME>/lib`
	• `com.ibm.websphere.classloader.plugin=`
	`     com.cyanea.bcm.websphere.BcmPlugin`
	• `deploymentmgr.rmi.connection=`
	`   <deployment manager host>:<deployment manager rmi port>`
	
	   Note: The deploymnetmgr.rmi.connection property is only required when using the deployment manager. Remove the old rmi manager host and port property.

Custom Services	Add a custom service as follows:
	
	`Name: AM Custom Service`
	
	`Classname: com.cyanea.ws5.ProbeService`
	
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Performance Monitoring Service	beanModule=X cacheModule=N connectionPoolModule=H j2cModule=H jvmRuntimeModule=H orbPerfModule=H servletSessionsModule=H systemModule=M threadPoolModule=H transactionModule=M webAppModule=H webServicesModule=N wlmModule=M wsgwModule=N

Configuration for WebSphere 6 on AIX

These are the recommended Application Server options for WebSphere 6 on AIX.

Table 21. Application Server Options for WebSphere 6 on AIX

Entity	Settings

Generic JVM Arguments	Add the following as arguments to the JVM command line:
	
	`-Xbootclasspath/p:<AM_HOME>`
	` /lib/bcm-bootstrap.jar:`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam`

Environment Entries	Set the following environment variables: • `_JVM_THREAD_DUMP_BUFFER_SIZE=25000000` • `AIXTHREAD_SCOPE=S` • `AIXTHREAD_MUTEX_DEBUG=OFF` • `AIXTHREAD_COND_DEBUG=OFF` • `AIXTHREAD_RWLOCK_DEBUG=OFF` • `LIBPATH=<AM_HOME>/lib` In order to view thread CPU times, set the following environment variable: • `AIXTHREAD_ENRUSG=ON`

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	` file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	` file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	` file://<MS_AM_HOME>/lib3.2/ppe.was_6.jar`
	` file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `am.profilename=<profile name>`
	• For ND (Network Deployment)
	
	`deploymentmgr.rmi.connection=<host:port,`
	`host1:port1,host2:port2>`
	• `appserver.platform=was6`
	• `com.ibm.websphere.classloader.plugin=`
	`   com.cyanea.bcm.websphere.BcmPlugin`
	• `am.profilename=<name of application server>`
	• Optional if you are using MQ:
	
	`am.ext.dirs=<MQ HOME>/lib`

Custom Services	Add a custom service as follows:
	`Name: AM Custom Service`
	`Classname: com.cyanea.ws6.ProbeService`
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Table 21. Application Server Options for WebSphere 6 on AIX (continued)

Entity	Settings
Performance Monitoring Service	statisticSet=extended

Configuration for WebSphere 6 on Intel/Linux and z/Linux

These are the recommended Application Server options for WebSphere 6 on Intel/Linux and z/Linux.

Table 22. Application Server Options for WebSphere 6 on Intel/Linux and z/Linux

Entity	Settings
Generic JVM Arguments	Add the following as arguments to the JVM command line: -Xoss2M -Xss1M -Xbootclasspath/p:<AM_HOME>/lib/bcm-bootstrap.jar: <AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam <AM_HOME> = AM installation directory
Environment Entries	Set the following environment variables: • `LD_LIBRARY_PATH =<AM_HOME>/lib`

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	  `file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.was_6.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	  Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `am.profilename=<profile name>`
	• For ND (Network Deployment)
	  `deploymentmgr.rmi.connection=<host:port, host1:port1,host2:port2>`
	• `appserver.platform=was6`
	• `com.ibm.websphere.classloader.plugin=`
	  `   com.cyanea.bcm.websphere.BcmPlugin`
	• `am.profilename=<name of application server>`
	• Optional if you are using MQ:
	  `am.ext.dirs=<MQ HOME>/lib`

Custom Services	Add a custom service as follows:
	`Name: AM Custom Service`
	`Classname: com.cyanea.ws6.ProbeService`
	`Classpath:null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Table 22. Application Server Options for WebSphere 6 on Intel/Linux and z/Linux (continued)

Entity	Settings
Performance Monitoring Service	statisticSet=extended

Configuration for WebSphere 6 on Solaris

These are the recommended Application Server options for WebSphere 6 on Solaris.

Table 23. Application Server Options for WebSphere 6 on Solaris

Entity	Settings

Generic JVM Arguments	Run the JVM in server mode.
	
	Add the following as arguments to the JVM command line:
	Note: The order in which the options are specified is important. Please follow this order.
	
	`-server -Xbootclasspath/p:<AM_HOME>`
	`/lib/bcm-bootstrap.jar:`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam`
	
	Note: The default NewSize and MaxNewSize might be small for some Applications if the Application is allocating large numbers of short living objects.
	
	Here are the settings we recommend for an application that allocates many short living objects:
	
	`-XX:+DisableExplicitGC -XX:NewSize=128m`
	` -XX:MaxNewSize=256m -Xconcurrentio`
	
	Note: The arguments NewSize and MaxNewSize should be set based on the Maximum and Minimum heap settings of the JVM.

Table 23. Application Server Options for WebSphere 6 on Solaris (continued)

Entity	Settings

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	  `file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.was_6.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	  Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.probe.stdout=<path of application server stdout>`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `am.profilename=<profile name>`
	• For ND (Network Deployment)
	  `deploymentmgr.rmi.connection=<host:port,`
	  `host1:port1,host2:port2>`
	• `appserver.platform=was6`
	• `com.ibm.websphere.classloader.plugin=`
	   `com.cyanea.bcm.websphere.BcmPlugin`
	• `am.profilename=<name of application server>`
	• Optional if you are using MQ:
	  `am.ext.dirs=<MQ HOME>/lib`

Custom Services	Add a custom service as follows:
	`Name: AM Custom Service`
	`Classname: com.cyanea.ws6.ProbeService`
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Performance Monitoring Service	statisticSet=extended
Environment Entries	Set the following environment variables: `LD_LIBRARY_PATH=<AM_HOME>/lib`

Configuration for WebSphere 6 on HP-UX

These are the recommended Application Server options for WebSphere 6 on HP-UX.

Table 24. Application Server Options for WebSphere 6 on HP-UX

Entity	Settings
Generic JVM Arguments	Add the following as arguments to the JVM command line: ``` -Xbootclasspath/p:<AM_HOME> /lib/bcm-bootstrap.jar: <AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam ``` **Note:** The default NewSize and MaxNewSize might be small for some Applications if the Application is allocating large numbers of short living objects. Some tuning we recommend for an application that allocates many short living objects: ``` -XX:+DisableExplicitGC -XX:NewSize=128m -XX:MaxNewSize=256m -Xconcurrentio ``` **Note:** NewSize and MaxNewSize should be changed based on the Maximum and Minimum heap settings of the JVM.

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	   `file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	   `file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	   `file://<MS_AM_HOME>/lib3.2/ppe.was_6.jar`
	   `file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	   Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.probe.stdout=<path of application server stdout>`
	• `am.home=<AM_HOME>`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `am.profilename=<profile name>`
	• For ND (Network Deployment)
	
	   `deploymentmgr.rmi.connection=<host:port,`
	   `host1:port1,host2:port2>`
	• `appserver.platform=was6`
	• `com.ibm.websphere.classloader.plugin=`
	   `com.cyanea.bcm.websphere.BcmPlugin`
	• `am.profilename=<name of application server>`
	• Optional if you are using MQ:
	
	   `am.ext.dirs=<MQ HOME>/lib`

Custom Services	Add a custom service as follows:
	
	`Name: AM Custom Service`
	
	`Classname: com.cyanea.ws6.ProbeService`
	
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Performance Monitoring Service	`statisticSet=extended`

Entity	Settings

Environment Entries	Set the following environment variables:
	
	`SHLIB_PATH=<AM_HOME>/lib`
	
	`am.home=<AM_HOME>`
	
	`am.nodename=<node name>`
	
	`am.appserver=<application server name>`
	
	`appserver.platform=was6`
	
	Optional if you are using MQ:
	
	`am.ext.dirs=<MQ HOME>/lib`

Configuration for WebSphere 6 on Windows

These are the recommended Application Server options for WebSphere 6 on Windows.

Table 25. Application Server Options for WebSphere 6 on Windows

Entity	Settings

Generic JVM Arguments	Add the following as arguments to the JVM command line:
	
	`-Xbootclasspath/p:<AM_HOME>`
	` /lib/bcm-bootstrap.jar;`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar -Xrunam`

Environment Entries	Set the following environment variables:
	
	`_JVM_THREAD_DUMP_BUFFER_SIZE=25000000`
	
	`PATH=<AM_HOME>\lib`

Custom Properties (JVM)	Add the following system properties:
	• `java.rmi.server.codebase =`
	`    file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	`    file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	`    file://<MS_AM_HOME>/lib3.2/ppe.was_6.jar`
	`    file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	  Where <MS_AM_HOME> is the directory where the Managing Server is installed. For example, C:\Program~1\IBM\wsam
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>\etc\datacollector.policy`
	• `am.nodename=<node name>`
	• `am.appserver=<application server name>`
	• `am.profilename=<profile name>`
	• For ND (Network Deployment)
	
	  `deploymentmgr.rmi.connection=<host:port,`
	  `host1:port1,host2:port2>`
	• `appserver.platform=was6`
	• `com.ibm.websphere.classloader.plugin=`
	`     com.cyanea.bcm.websphere.BcmPlugin`
	• `am.profilename=<name of application server>`
	• Optional if you are using MQ:
	
	  `am.ext.dirs=<MQ HOME>/lib`

Entity	Settings

Custom Services	Add a custom service as follows:
	
	`Name: AM Custom Service`
	
	`Classname: com.cyanea.ws6.ProbeService`
	
	`Classpath: null`
	
	Note: There is a defect in the Administrative Console that will not allow you to type an empty classpath.

Performance Monitoring Service	statisticSet=extended

Configuration for WebLogic 7.0 SP5 on Intel/Linux

These are the recommended Application Server options for WebLogic 7.0 SP5 on Linux.

Table 26. Application Server Options for WebLogic 7.0 SP5 on Linux

Entity	Settings

Java Command Line Arguments	The following arguments must be first on the Java command line:
	-server
	
	`-Xrunam`
	
	-Xbootclasspath/p:<AM_HOME>/lib/bcm-bootstrap.jar:
	<AM_HOME>/lib/ppe.probe-bootstrap.jar
	
	The following is an example of how to redirect the standard output to a file:
	
	`./startWebLogic.sh > logs/stdout.log`
	
	Define the following system properties and modify CLASSPATH in $WL_HOME/server/bin/startWLS.sh.
	• `java.rmi.server.codebase =`
	`  file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	`  file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	`  file://<MS_AM_HOME>/lib3.2/ppe.wls_7.jar`
	`  file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	  Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	  `appserver.platform=wls7050`
	
	  `weblogic.Domain=<DOMAIN NAME>`
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.probe.stdout=<path of application server stdout>`
	• `weblogic.classloader.preprocessor=com.cyanea.bcm.`
	`  weblogic.BcmPreProcessor`

Table 26. Application Server Options for WebLogic 7.0 SP5 on Linux (continued)

Entity	Settings

Java Command Line Arguments	(Continued from the previous table row)
	
	Modify the CLASSPATH as follows:
	
	`CLASSPATH=<AM_HOME>`
	`/lib/ext/ppe.probe.jar:<AM_HOME>/lib/ext/ppe.probe-intf.jar:`
	`<AM_HOME>/lib/ext/common.jar:`
	`<AM_HOME>/lib/ext/kernel.common.jar:`
	`<AM_HOME>/lib/cyaneaaux.jar:`
	`<AM_HOME>/lib/ext/model.jar:`
	`<AM_HOME>/lib/ext/cdn.jar:`
	`<AM_HOME>/lib/ext/ppe.wls_7.jar:`
	`<AM_HOME>/lib/ext/cdnaux.jar$:CLASSPATH`

Startup Class
 	
Shutdown Class
	`Classname: com.cyanea.wl70.WLStartup`
	
	`Name: AM Startup`
	
	`Targets: <your application server>`
	
	`Classname: com.cyanea.wl70.WLShutdown`
	
	`Name: AM Shutdown`
	
	`Targets: <your application server>`

Environment Variables	Set the following environment variable: `LD_LIBRARY_PATH=<AM_HOME>/lib:$LD_LIBRARY_PATH` Set this variable in $WL_HOME/common/bin/commEnv.sh file.

Configuration for WebLogic 7.0 SP5 on Solaris

These are the recommended Application Server options for WebLogic 7.0 SP5 on Solaris.

Table 27. Application Server Options for WebLogic 7.0 SP5 on Solaris

Entity	Settings

Java Command Line Arguments	The following argument must be first on the Java command line:
	`-server -Xrunam -Xbootclasspath/p:<AM_HOME>`
	`/lib/bcm-bootstrap.jar:`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar`
	
	Note: The default NewSize and MaxNewSize might be small for some Applications if the Application is allocating large numbers of short living objects.
	
	Here are the settings we recommend for an application that allocates many short living objects:
	`-XX:+DisableExplicitGC -XX:NewSize=128m`
	`-XX:MaxNewSize=256m -Xconcurrentio`
	
	Note: The arguments NewSize and MaxNewSize should be set based on the Maximum and Minimum heap settings of the JVM.
	
	The following is an example of how to redirect the standard output to a file:
	`./startWebLogic.sh > logs/stdout.log`
	
	(path of application server stdout)

Table 27. Application Server Options for WebLogic 7.0 SP5 on Solaris (continued)

Entity	Settings

Java Command Line Arguments	(Continued from the previous table row)
	
	Define the following system properties in the WebLogic startup script:
	• `java.rmi.server.codebase =`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	  `file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.wls_7.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	  Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	  `appserver.platform=wls7050`
	• `am.home=<AM_HOME>`
	• `weblogic.Domain=<domain>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.probe.stdout=<path of application server stdout>`
	• `weblogic.classloader.preprocessor=com.cyanea.bcm.`
	  `weblogic.BcmPreProcessor`

Java Command Line Arguments	(Continued from the previous table row)
	
	Modify the CLASSPATH as follows:
	
	`CLASSPATH=<AM_HOME>/lib/ext/ppe.probe.jar:`
	`<AM_HOME>/lib/ext/ppe.probeintf.jar:`
	`<AM_HOME>/lib/ext/common.jar:`
	`<AM_HOME>/lib/ext/kernel.common.jar:`
	`<AM_HOME>/lib/cyaneaaux.jar:`
	`<AM_HOME>/lib/ext/model.jar:`
	`<AM_HOME>/lib/ext/cdn.jar:`
	`<AM_HOME>/lib/ext/ppe.wls_7.jar:`
	`<AM_HOME>/lib/ext/cdnaux.jar$:$CLASSPATH`

Startup Class
 	
Shutdown Class
	`Classname: com.cyanea.wl70.WLStartup`
	`Name: AM Startup`
	`Targets: <your application server>`
	`Classname: com.cyanea.wl70.WLShutdown`
	`Name: AM Shutdown`
	`Targets: <your application server>`

Environment Variables	Set the following environment variable: `LD_LIBRARY_PATH=<AM_HOME>/lib:$LD_LIBRARY_PATH` Set this variable in <WL_HOME>/common/bin/commEnv.sh file.

Configuration for WebLogic 7.0 SP5 on HP-UX

These are the recommended Application Server options for WebLogic 7.0 SP5 on HP-UX.

Table 28. Application Server Options for WebLogic 7.0 SP5 on HP-UX

Entity	Settings

Java Command Line Arguments	The following argument must be first on the Java command line:
	
	`-server -Xrunam -Xbootclasspath/p:<AM_HOME>`
	`/lib/bcm-bootstrap.jar:`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar`
	
	Note: The default NewSize and MaxNewSize might be small for some Applications if the Application is allocating large numbers of short living objects.
	
	Here are the settings we recommend for an application that allocates many short living objects:
	
	`-XX:+DisableExplicitGC -XX:NewSize=128m`
	`-XX:MaxNewSize=256m -Xconcurrentio`
	
	Note: The arguments NewSize and MaxNewSize should be set based on the Maximum and Minimum heap settings of the JVM.
	
	The following is an example of how to redirect the standard output to a file:
	
	`./startWebLogic.sh > logs/stdout.log`
	
	(path of application server stdout)

Java Command Line Arguments	(Continued from previous table row)
	
	Define the following system properties in the WebLogic startup script:
	• `java.rmi.server.codebase =`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	  `file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.wls_7.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	  appserver.platform=wls7050 Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	• `am.home=<AM_HOME>`
	• `weblogic.Domain=<domain>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.probe.stdout=<path of application server stdout>`
	• `weblogic.classloader.preprocessor=com.cyanea.bcm.`
	  `weblogic.BcmPreProcessor`

Java Command Line Arguments	(Continued from previous table row)
	
	Modify the CLASSPATH as follows:
	
	`CLASSPATH=<AM_HOME>/lib/ext/ppe.probe.jar:`
	`<AM_HOME>/lib/ext/ppe.probe-intf.jar:`
	`<AM_HOME>/lib/ext/common.jar:`
	`<AM_HOME>/lib/ext/kernel.common.jar:`
	`<AM_HOME>/lib/cyaneaaux.jar:`
	`<AM_HOME>/lib/ext/model.jar:`
	`<AM_HOME>/lib/ext/cdn.jar:`
	`<AM_HOME>/lib/ext/ppe.wls_7.jar:`
	`<AM_HOME>/lib/ext/cdnaux.jar$:$CLASSPATH`

Entity	Settings
Startup Class Shutdown Class	Classname: com.cyanea.wl70.WLStartup Name: AM Startup Targets: <your application server> Classname: com.cyanea.wl70.WLShutdown Name: AM Shutdown Targets: <your application server>
Environment Variables	Set the following environment variable: SHLIB_PATH=<AM_HOME>/lib:$SHLIB_PATH Set this variable in $WL_HOME/common/bin/commEnv.sh file.

Configuration for WebLogic 7.0 SP5 on Windows

These are the recommended Application Server options for WebLogic 7.0 SP5 on Windows.

Table 29. Application Server Options for WebLogic 7.0 SP5 on Windows

Entity	Settings

Java Command Line Arguments	The following arguments must be first on the Java command line:
	-server
	-Xrunam
	-Xbootclasspath\p:<AM_HOME>\lib\bcm-bootstrap.jar;
	<AM_HOME>\lib\ppe.probe-bootstrap.jar
	
	The following is an example of how to redirect the standard output to a file:
	startWebLogic.bat > c:\temp\stdout.log
	
	Define the following system properties and modify CLASSPATH in $WL_HOME\server\bin\startWLS.sh.
	• java.rmi.server.codebase =
	  file:\\<MS_AM_HOME>\lib3.2\ppe.probe.jar
	  file:\\<MS_AM_HOME>\lib\ppe.probe-intf.jar
	  file:\\<MS_AM_HOME>\lib3.2\ppe.wls_7.jar
	  file:\\<MS_AM_HOME>\lib3.2\ppe.probe-bootstrap.jar
	
	  Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, C:\Program~1\IBM\wsam.
	  appserver.platform=wls7050
	
	  weblogic.Domain=<DOMAIN NAME>
	• am.home=<AM_HOME>
	• java.security.policy=<AM_HOME>\etc\datacollector.policy
	• am.probe.stdout=<path of application server stdout>
	• weblogic.classloader.preprocessor=com.cyanea.bcm.
	  weblogic.BcmPreProcessor

Table 29. Application Server Options for WebLogic 7.0 SP5 on Windows (continued)

Entity	Settings

Java Command Line Arguments	(Continued from the previous table row)
	
	Modify the CLASSPATH as follows:
	
	`CLASSPATH=<AM_HOME>\lib\ext\ppe.probe.jar;`
	`<AM_HOME>\lib\ext\ppe.probe-intf.jar;`
	`<AM_HOME>\lib\ext\common.jar;`
	`<AM_HOME>\lib\ext\kernel.common.jar;`
	`<AM_HOME>\lib\ext\cyaneaaux.jar;`
	`<AM_HOME>\lib\ext\model.jar;`
	`<AM_HOME>\lib\ext\cdn.jar;`
	`<AM_HOME>\lib\ext\ppe.wls_7.jar;`
	`<AM_HOME>/lib/ext/cdnaux.jar$;%CLASSPATH%`

Startup Class
 	
Shutdown Class
	`Classname: com.cyanea.wl70.WLStartup`
	`Name: AM Startup`
	`Targets: <your application server>`
	`Classname: com.cyanea.wl70.WLShutdown`
	`Name: AM Shutdown`
	`Targets: <your application server>`

Environment Variables	Set the following environment variable: `LD_LIBRARY_PATH=<AM_HOME>\lib;%LD_LIBRARY_PATH%` Set this variable in <WL_HOME>\common\bin\commEnv.sh file.

Configuration for WebLogic 8.1 SP3 on Intel/Linux

These are the recommended Application Server options for WebLogic 8.1 SP8.3 on Linux.

Table 30. Application Server Options for WebLogic 8.1 SP3 on Linux

Entity	Settings

Java Command Line Arguments	The following arguments must be first on the Java command line:
	`-Xrunam`
	
	`-Xbootclasspath/p:<AM_HOME>/lib/bcm-bootstrap.jar:`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar`
	
	The following is an example of how to redirect the standard output to a file:
	`./startWebLogic.sh > logs/stdout.log`

Entity	Settings

Java Command Line Arguments	(Continued from previous table row)
	
	Define the following system properties in the WebLogic startup script:
	• `java.rmi.server.codebase =`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	  `file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.wls_8130.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	  Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	  `appserver.platform=wls8130`
	
	  `weblogic.Domain=<DOMAIN NAME>`
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.probe.stdout=<path of application server stdout>`
	• `weblogic.classloader.preprocessor=com.cyanea.bcm.`
	  `weblogic.BcmPreProcessor`

Java Command Line Arguments	(Continued from previous table row) Modify the CLASSPATH as follows: CLASSPATH=<AM_HOME>/lib/ext/ppe.probe.jar: <AM_HOME>/lib/ext/ppe.probe-intf.jar: <AM_HOME>/lib/ext/common.jar: <AM_HOME>/lib/ext/kernel.common.jar: <AM_HOME>/lib/cyaneaaux.jar: <AM_HOME>/lib/ext/model.jar: <AM_HOME>/lib/ext/cdn.jar: <AM_HOME>/lib/ext/ppe.wls_8130.jar: <AM_HOME>/lib/ext/cdnaux.jar$:$CLASSPATH

Startup Class
 	
Shutdown Class
	`Classname: com.cyanea.wl81.WLStartup`
	`Name: AM Startup`
	`Targets: <your application server>`
	`Classname: com.cyanea.wl81.WLShutdown`
	`Name: AM Shutdown`
	`Targets: <your application server>`

Environment Variables	Set the following environment variable: `LD_LIBRARY_PATH=<AM_HOME>/lib:$LD_LIBRARY_PATH` Set this variable in <WL_HOME>/common/bin/commEnv.sh file.

Configuration for WebLogic 8.1 SP3 on Solaris

These are the recommended Application Server options for WebLogic 8.1 SP3 on Solaris.

Table 31. Application Server Options for WebLogic 8.1 SP3 on Solaris

Entity	Settings

Java Command Line Arguments	The following argument must be first on the Java command line:
	
	`-Xrunam-Xbootclasspath/p:<AM_HOME>`
	`/lib/bcm-bootstrap.jar:`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar`
	
	Note: The default NewSize and MaxNewSize might be small for some Applications if the Application is allocating large numbers of short living objects.
	
	Here are the settings we recommend for an application that allocates many short living objects:
	
	`-XX:+DisableExplicitGC -XX:NewSize=128m`
	`-XX:MaxNewSize=256m -Xconcurrentio`
	
	Note: The arguments NewSize and MaxNewSize should be set based on the Maximum and Minimum heap settings of the JVM.
	
	The following is an example of how to redirect the standard output to a file:
	
	`./startWebLogic.sh > logs/stdout.log`
	
	(path of application server stdout)

Java Command Line Arguments	(Continued from previous table row)
	
	Define the following system properties in the WebLogic startup script:
	• `java.rmi.server.codebase =`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	  `file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.wls_8130.jar`
	  `file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	  Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	
	  `appserver.platform=wls8130`
	• `am.home=<AM_HOME>`
	• `weblogic.Domain=<domain>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.probe.stdout=<path of application server stdout>`
	• `weblogic.classloader.preprocessor=com.cyanea.bcm.`
	  `weblogic.BcmPreProcessor`

Java Command Line Arguments	(Continued from previous table row) Modify the CLASSPATH as follows: CLASSPATH=<AM_HOME>/lib/ext/ppe.probe.jar: <AM_HOME>/lib/ext/ppe.probe-intf.jar: <AM_HOME>/lib/ext/common.jar: <AM_HOME>/lib/ext/kernel.common.jar: <AM_HOME>/lib/cyaneaaux.jar: <AM_HOME>/lib/ext/model.jar: <AM_HOME>/lib/ext/cdn.jar: <AM_HOME>/lib/ext/ppe.wls_8130.jar: <AM_HOME>/lib/ext/cdnaux.jar$:$CLASSPATH

Table 31. Application Server Options for WebLogic 8.1 SP3 on Solaris (continued)

Entity	Settings

Startup Class
 	
Shutdown Class
	`Classname: com.cyanea.wl81.WLStartup`
	`Name: AM Startup`
	`Targets: <your application server>`
	`Classname: com.cyanea.wl81.WLShutdown`
	`Name: AM Shutdown`
	`Targets: <your application server>`

Environment Variables	Set the following environment variable: `LD_LIBRARY_PATH=<AM_HOME>/lib:$LD_LIBRARY_PATH` Set this variable in <WL_HOME>/common/bin/commEnv.sh file.

Configuration for WebLogic 8.1 SP3 on HP-UX

These are the recommended Application Server options for WebLogic 8.1 SP3 on HP-UX.

Table 32. Application Server Options for WebLogic 8.1 SP3 on HP-UX

Entity	Settings

Java Command Line Arguments	The following argument must be first on the Java command line:
	`-Xrunam-Xbootclasspath/p:<AM_HOME>`
	`/lib/bcm-bootstrap.jar:`
	`<AM_HOME>/lib/ppe.probe-bootstrap.jar`
	
	Note: The default NewSize and MaxNewSize might be small for some Applications if the Application is allocating large numbers of short living objects.
	
	Here are the settings we recommend for an application that allocates many short living objects:
	`-XX:+DisableExplicitGC -XX:NewSize=128m`
	`-XX:MaxNewSize=256m -Xconcurrentio`
	
	Note: The arguments NewSize and MaxNewSize should be set based on the Maximum and Minimum heap settings of the JVM.
	
	The following is an example of how to redirect the standard output to a file:
	`./startWebLogic.sh > logs/stdout.log`
	
	(path of application server stdout)

Table 32. Application Server Options for WebLogic 8.1 SP3 on HP-UX (continued)

Entity	Settings

Java Command Line Arguments	(Continued from the previous table row)
	
	Define the following system properties in the WebLogic startup script:
	• `java.rmi.server.codebase =`
	`file://<MS_AM_HOME>/lib3.2/ppe.probe.jar`
	`file://<MS_AM_HOME>/lib/ppe.probe-intf.jar`
	`file://<MS_AM_HOME>/lib3.2/ppe.wls_8130.jar`
	`file://<MS_AM_HOME>/lib3.2/ppe.probe-bootstrap.jar`
	
	Where <MS_AM_HOME> is the am_home where the Managing Server was installed. For example, /opt/ibm/wsam.
	`appserver.platform=wls8130`
	• `am.home=<AM_HOME>`
	• `weblogic.Domain=<domain>`
	• `java.security.policy=<AM_HOME>/etc/datacollector.policy`
	• `am.probe.stdout=<path of application server stdout>`
	• `weblogic.classloader.preprocessor=com.cyanea.bcm.`
	`weblogic.BcmPreProcessor`

Java Command Line Arguments	(Continued from the previous table row) Modify the CLASSPATH as follows: CLASSPATH=<AM_HOME>/lib/ext/ppe.probe.jar: <AM_HOME>/lib/ext/ppe.probe-intf.jar: <AM_HOME>/lib/ext/common.jar: <AM_HOME>/lib/ext/kernel.common.jar: <AM_HOME>/lib/cyaneaaux.jar: <AM_HOME>/lib/ext/model.jar: <AM_HOME>/lib/ext/cdn.jar: <AM_HOME>/lib/ext/ppe.wls_8130.jar: <AM_HOME>/lib/ext/cdnaux.jar$:$CLASSPATH

Startup Class
 	
Shutdown Class
	`Classname: com.cyanea.wl81.WLStartup`
	`Name: AM Startup`
	`Targets: <your application server>`
	`Classname: com.cyanea.wl81.WLShutdown`
	`Name: AM Shutdown`
	`Targets: <your application server>`

Environment Variables	Set the following environment variable: `SHLIB_PATH=<AM_HOME>/lib:$SHLIB_PATH` Set this variable in <WL_HOME>/common/bin/commEnv.sh file.

Configuration for WebLogic 8.1 SP3 on Windows

These are the recommended Application Server options for WebLogic 8.1 SP3 on Windows.

Table 33. Application Server Options for WebLogic 8.1 SP3 on Windows

Entity	Settings

Java Command Line Arguments	The following arguments must be first on the Java command line:
	`-Xrunam`
	
	-Xbootclasspath\p:<AM_HOME>\lib\bcm-bootstrap.jar;
	<AM_HOME>\lib\ppe.probe-bootstrap.jar
	
	The following is an example of how to redirect the standard output to a file:
	`startWebLogic.bat > c:\logs\stdout.log`

Java Command Line Arguments	(Continued from previous table row)
	
	Define the following system properties in the WebLogic startup script:
	• `java.rmi.server.codebase =`
	`  file:\\<MS_AM_HOME>\lib3.2\ppe.probe.jar`
	`  file:\\<MS_AM_HOME>\lib\ppe.probe-intf.jar`
	`  file:\\<MS_AM_HOME>\lib3.2\ppe.wls_8130.jar`
	`  file:\\<MS_AM_HOME>\lib3.2\ppe.probe-bootstrap.jar`
	
	Where <MS_AM_HOME> is the am home where the Managing Server was installed. For example, C:\Program~1\IBM\wsam.
	`appserver.platform=wls8130`
	
	`weblogic.Domain=<DOMAIN NAME>`
	• `am.home=<AM_HOME>`
	• `java.security.policy=<AM_HOME>\etc\datacollector.policy`
	• `am.probe.stdout=<path of application server stdout>`
	• `weblogic.classloader.preprocessor=com.cyanea.bcm.`
	`  weblogic.BcmPreProcessor`

Java Command Line Arguments	(Continued from previous table row) Modify the CLASSPATH as follows: CLASSPATH=<AM_HOME>\lib\ext\ppe.probe.jar; <AM_HOME>\lib\ext\ppe.probe-intf.jar; <AM_HOME>\lib\ext\common.jar; <AM_HOME>\lib\ext\kernel.common.jar; <AM_HOME>\lib\ext\cyaneaaux.jar; <AM_HOME>\lib\ext\model.jar; <AM_HOME>\lib\ext\cdn.jar; <AM_HOME>\lib\ext\ppe.wls_8130.jar; <AM_HOME>\lib\ext\cdnaux.jar$;%CLASSPATH%

Startup Class
 	
Shutdown Class
	`Classname: com.cyanea.wl81.WLStartup`
	`Name: AM Startup`
	`Targets: <your application server>`
	`Classname: com.cyanea.wl81.WLShutdown`
	`Name: AM Shutdown`
	`Targets: <your application server>`

Table 33. Application Server Options for WebLogic 8.1 SP3 on Windows (continued)

Entity	Settings
Environment Variables	Set the following environment variable: `LD_LIBRARY_PATH=<AM_HOME>\lib;%LD_LIBRARY_PATH%` Set this variable in $WL_HOME\common\bin\commEnv.sh file.

Appendix E. Setting up an HTTP Server with your Managing Server

It is recommended that you use an HTTP Web server to access the Managing Server front end running on WebSphere Application Server. If you choose to use IBM HTTP Server (IHS) version 1.3, verify the following:

1. Please make sure that the IHS installation program has appended the following two lines to the Web server configuration file httpd.conf

   ```
   LoadModule ibm_app_server_http_module
      \ <WAS_HOME>/bin/mod_ibm_app_server_http.so
   WebSpherePluginConfig <WAS_HOME>/config/cells/plugin-cfg.xmldd
   ```

   where <WAS_HOME> is your WebSphere 5.1 installation directory. The configuration file httpd.conf usually gets installed in directory /usr/HTTPServer/conf or /opt/IBMHTTPServer/conf, but that varies depending on the conventions used at your site.

2. If the Web server is not configured to listen to the default port (80), you will need to specify the appropriate port number in the Managing Server front end access URL (e.g. http://<hostname>:90/am/home for port 90). If you wish to access the front end at the default port (80), you need to verify that the Web server is listening at the default port. The ports are defined by two IHS runtime directives

   ```
   Port 80
   ```
   ```
   Listen 80
   ```

   in the httpd.conf file. Once the plug-in and port configurations for IHS are correct, you may access the front end without any port specification in the URL (e.g. http://<hostname/am/home).

3. Go to your WebSphere admin console and click the Environment >Update Web Server Plugin link, and click OK to update the Web Server Plugin file.

4. For further information on configuring IHS, please refer to IBM documentation at http://publib.boulder.ibm.com/infocenter/wasinfo/index.jsp?topic= /com.ibm.websphere.base.doc/info/aes/ae/tins_webserver.html.

Appendix F. iText and PDF support

To enable PDF support, do the following:

1. Download iText package, in particular, we need iText.jar (http://www.lowagie.com/iText/download.html) and iTextAsian.jar files (http://itext.sourceforge.net/downloads/iTextAsian.jar).

2. Place iText.jar and iTextAsian.jar in $AM_HOME/lib.

   Note: You will need to rename the file to iText.jar if it is not named that already.

3. If Visualization Engine (VE) is installed on WebSphere, then bring up the WebSphere Admin Console; select the server where the VE is installed. Select Process Definition < Java Virtual Machine. In the classpath, add $AM_HOME/lib/iText.jar:$AM_HOME/lib/iTextAsian.jar.

   Note: $AM_HOME needs to be replaced by the real path where the WSAM Managing Server is installed.

   Note: If VE is installed on WebLogic, then instead of using the admin console, modify the startup script of the VE WebLogic Server. Both $AM_HOME/lib/iText.jar:$AM_HOME/lib/iTextAsian.jar need to be added to the classpath. The rest of the steps are the same for WebLogic and WebSphere.

4. Modify $AM_HOME/etc/ve.properties and set ve.framework.pdf=yes.

5. Restart the Application Server.

Appendix G. Support Information

http://www.ibm.com/software/support

http://techsupport.services.ibm.com/guides/handbook.html

http://techsupport.services.ibm.com/guides/contacts.html

http://www.lotus.com/services/passport.nsf/
WebDocs/Passport_Advantage_Home

https://techsupport.services.ibm.com/ssr/login

http://www.ibm.com/software/support/probsub.html

http://www.ibm.com/servers/eserver/techsupport.html

http://www.ibm.com/services/us/index.wss/so/its/a1000030/dt006

If you have a problem with your IBM software, you want to resolve it quickly. This
section describes the following options for obtaining support for IBM software
products:

* "Searching knowledge bases"
* "Obtaining fixes" on page 214
* "Receiving weekly support updates" on page 214
* "Contacting IBM Software Support" on page 215

Searching knowledge bases

You can search the available knowledge bases to determine whether your problem
was already encountered and is already documented.

Searching the information center

IBM provides extensive documentation that can be installed on your local
computer or on an intranet server. You can use the search function of this
information center to query conceptual information, instructions for completing
tasks, and reference information.

Searching the Internet

If you cannot find an answer to your question in the information center, search the
Internet for the latest, most complete information that might help you resolve your
problem.

To search multiple Internet resources for your product, use the **Web search** topic in
your information center. In the navigation frame, click **Troubleshooting and
support ▶ Searching knowledge bases** and select **Web search**. From this topic, you
can search a variety of resources, including the following:

* IBM technotes
* IBM downloads
* IBM Redbooks

- IBM developerWorks
- Forums and newsgroups
- Google

Obtaining fixes

A product fix might be available to resolve your problem. To determine what fixes are available for your IBM software product, follow these steps:

1. Go to the IBM Software Support Web site at http://www.ibm.com/software/support.
2. Click **Downloads and drivers** in the **Support topics** section.
3. Select the **Software** category.
4. Select a product in the **Sub-category** list.
5. In the **Find downloads and drivers by product** section, select one software category from the **Category** list.
6. Select one product from the **Sub-category** list.
7. Type more search terms in the **Search within results** if you want to refine your search.
8. Click **Search**.
9. From the list of downloads returned by your search, click the name of a fix to read the description of the fix and to optionally download the fix.

For more information about the types of fixes that are available, see the *IBM Software Support Handbook* at http://techsupport.services.ibm.com/guides/handbook.html.

Receiving weekly support updates

To receive weekly e-mail notifications about fixes and other software support news, follow these steps:

1. Go to the IBM Software Support Web site at http://www.ibm.com/software/support.
2. Click **My support** in the upper right corner of the page.
3. If you have already registered for **My support**, sign in and skip to the next step. If you have not registered, click **register now**. Complete the registration form using your e-mail address as your IBM ID and click **Submit**.
4. Click **Edit profile**.
5. In the **Products** list, select **Software**. A second list is displayed.
6. In the second list, select a product segment, for example, **Application servers**. A third list is displayed.
7. In the third list, select a product sub-segment, for example, **Distributed Application & Web Servers**. A list of applicable products is displayed.
8. Select the products for which you want to receive updates, for example, **IBM HTTP Server** and **WebSphere Application Server**.
9. Click **Add products**.
10. After selecting all products that are of interest to you, click **Subscribe to email** on the **Edit profile** tab.
11. Select **Please send these documents by weekly email**.
12. Update your e-mail address as needed.
13. In the **Documents** list, select **Software**.

14. Select the types of documents that you want to receive information about.
15. Click **Update**.

If you experience problems with the **My support** feature, you can obtain help in one of the following ways:

Online
> Send an e-mail message to erchelp@ca.ibm.com, describing your problem.

By phone
> Call 1-800-IBM-4You (1-800-426-4968).

Contacting IBM Software Support

IBM Software Support provides assistance with product defects.

Before contacting IBM Software Support, your company must have an active IBM software maintenance contract, and you must be authorized to submit problems to IBM. The type of software maintenance contract that you need depends on the type of product you have:

- For IBM distributed software products (including, but not limited to, Tivoli, Lotus, and Rational products, as well as DB2 and WebSphere products that run on Windows, or UNIX operating systems), enroll in Passport Advantage in one of the following ways:

  Online
  > Go to the Passport Advantage Web site at http://www.lotus.com/services/passport.nsf/ WebDocs/Passport_Advantage_Home and click **How to Enroll**.

  By phone
  > For the phone number to call in your country, go to the IBM Software Support Web site at http://techsupport.services.ibm.com/guides/contacts.html and click the name of your geographic region.

- For customers with Subscription and Support (S & S) contracts, go to the Software Service Request Web site at https://techsupport.services.ibm.com/ssr/login.

- For customers with IBMLink, CATIA, Linux, S/390, iSeries, pSeries, zSeries, and other support agreements, go to the IBM Support Line Web site at http://www.ibm.com/services/us/index.wss/so/its/a1000030/dt006.

- For IBM eServer software products (including, but not limited to, DB2 and WebSphere products that run in zSeries, pSeries, and iSeries environments), you can purchase a software maintenance agreement by working directly with an IBM sales representative or an IBM Business Partner. For more information about support for eServer software products, go to the IBM Technical Support Advantage Web site at http://www.ibm.com/servers/eserver/techsupport.html.

If you are not sure what type of software maintenance contract you need, call 1-800-IBMSERV (1-800-426-7378) in the United States. From other countries, go to the contacts page of the *IBM Software Support Handbook* on the Web at http://techsupport.services.ibm.com/guides/contacts.html and click the name of your geographic region for phone numbers of people who provide support for your location.

To contact IBM Software support, follow these steps:

1. "Determining the business impact"
2. "Describing problems and gathering information"
3. "Submitting problems"

Determining the business impact

When you report a problem to IBM, you are asked to supply a severity level. Therefore, you need to understand and assess the business impact of the problem that you are reporting. Use the following criteria:

Severity 1
> The problem has a *critical* business impact. You are unable to use the program, resulting in a critical impact on operations. This condition requires an immediate solution.

Severity 2
> The problem has a *significant* business impact. The program is usable, but it is severely limited.

Severity 3
> The problem has *some* business impact. The program is usable, but less significant features (not critical to operations) are unavailable.

Severity 4
> The problem has *minimal* business impact. The problem causes little impact on operations, or a reasonable circumvention to the problem was implemented.

Describing problems and gathering information

When describing a problem to IBM, be as specific as possible. Include all relevant background information so that IBM Software Support specialists can help you solve the problem efficiently. To save time, know the answers to these questions:

- What software versions were you running when the problem occurred?
- Do you have logs, traces, and messages that are related to the problem symptoms? IBM Software Support is likely to ask for this information.
- Can you re-create the problem? If so, what steps were performed to re-create the problem?
- Did you make any changes to the system? For example, did you make changes to the hardware, operating system, networking software, and so on.
- Are you currently using a workaround for the problem? If so, be prepared to explain the workaround when you report the problem.

Submitting problems

You can submit your problem to IBM Software Support in one of two ways:

Online
> Click **Submit and track problems** on the IBM Software Support site at http://www.ibm.com/software/support/probsub.html. Type your information into the appropriate problem submission form.

By phone
> For the phone number to call in your country, go to the contacts page of the *IBM Software Support Handbook* at http://techsupport.services.ibm.com/guides/contacts.html and click the name of your geographic region.

If the problem you submit is for a software defect or for missing or inaccurate documentation, IBM Software Support creates an Authorized Program Analysis Report (APAR). The APAR describes the problem in detail. Whenever possible, IBM Software Support provides a workaround that you can implement until the APAR is resolved and a fix is delivered. IBM publishes resolved APARs on the Software Support Web site daily, so that other users who experience the same problem can benefit from the same resolution.

Appendix H. Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. These are the major accessibility features you can use with *WebSphere Studio Application Monitor* when accessing it via the *IBM Personal Communications* terminal emulator:

- You can operate all features using the keyboard instead of the mouse.
- You can read text text through interaction with assistive technology.
- You can use system settings for font, size, and color for all user interface controls.
- You can magnify what is displayed on your screen.

Appendix I. Notices

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